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USSR Report

TRANSPORTATION

No. 79

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BUGAYEV RECOUNTS HISTORY OF U.S.-USSR AVIATION AGREEMENTS

Moscow LITERATURNAYA GAZETA in Russian No 9, 3 Mar 82 p 14

/Interview with Boris Pavlovich Bugayev, USSR minister of civil aviation, by special correspondent Naum Mar: "From Washington to Moscow via...?"; date and place not given; passages enclosed in slantlines printed in boldface/

> /Text/ /At the beginning of January 1982 regular flights by Aeroflot's airplanes to the United States were canceled. The ostensibly juridical grounds for this action was the order of the U.S. aviation authorities No. 81-12-178, wherein it is stated verbatim that: "...recent world events have affected our relations with the USSR in the field of aviation." Further on in this same document we are informed as follows: "Proceeding from foreign-policy considerations, President Reagan has decided that the Soviet aviation company Aeroflot should not be permitted to make further round-trip flights to the United States."
>
> This sanction by the American administration became the first in a series of others, which have now been condemned by world public opinion. They are being carried out in connection with the Polish events, which, as is well known, are strictly an internal matter concerning the sovereign state of People's Poland, a matter for the Poles and only them.
>
> Minister of Civil Aviation Boris Pavlovich Bugayev, who, by the way, in 1957 flew the first Soviet jet airplane, a TU-104, over the air route Moscow--New York--Moscow, kindly agreed to answer questions from LITERATURNAYA GAZETA./

/Question/ How can you explain, Comrade Minister, such a hostile action with regard to Aeroflot on the part of the American administration, which has canceled flights by Soviet passenger airplanes to the United States? In your opinion, what is the real state of affairs behind this decision, which constitutes an extremely gross violation of the well-known documents adopted at Helsinki, which were also signed by the U.S. government?

/Answer/ Your questions touch upon a number of important aspects--commercial, legal, and finally, international--stated USSR Minister of Civil Aviation Boris Pavlovich Bugayev.

Let's begin with some history. First of all, I would like to remind the readers of LITERATURNAYA GAZETA that in November 1966, after lengthy negotiations, an agreement was signed in Washington which provided all the necessary conditions for ensuring normal air transportation between our two countries. This document served as a good foundation for organizing air transportation over the route USSR--United States--USSR, which was opened up in mid-July 1968 with flights by the airplanes of Aeroflot and the Pan American Airlines between Moscow and New York. The traffic was set up well. The flow of passengers and freight grew, and the benefits for both countries were evident. The new air route noticeably facilitated the animation of commercial, cultural, scientific and technical, and sports connections between the USSR and the United States. It aided in drawing the Soviet and American peoples closer together.

Under the conditions of detente the need arose naturally for further expanding our joint work in the field of civil aviation. Particular emphasis must be placed on the important circumstance that during the visit of General Secretary of the CPSU CC L. I. Brezhnev to the United States in June 1973 an Agreement was signed concerning cooperation in the field of transportation as well as a Protocol on questions of expanding cooperation in the field of air transportation. In accordance with this protocol, the geography of the flights was expanded, and the frequency of the flights was increased. Regular trips were inaugurated between the capitals of the two countries--Moscow and Washington. To any unprejudiced observer it was clear that the expansion of civil aviation ties could bring only benefits to both countries....

By 1975 the frequency of the flights by the airplanes of Aeroflot and Pan American had grown to four trips per week. These aviation companies also negotiated for further expansion of air transportation, providing for a long-term program of daily flights as well as introducing on these routes flights using up-to-date, wide-bodied airplanes which can put 300--400 passengers on board.

/Question/ So what happened subsequently, Comrade Minister? How did it come about that these fine plans were not put into practice?

/Answer/ The activation of commercial cooperation between our two countries, including that in the sphere of civil aviation, turned out to be not to the liking of the "gentlemen" from the military-industrial complex, who, as is well known, are endeavoring to cut short detente, exacerbate to the limit international relations, and hinder as much as possible commercial ties between the Soviet and American peoples.

The fact that matters stand precisely thus is testified to by a number of facts, which need to be cited here.

In November 1975, literally on the eve of the talks between the delegates of the USSR Ministry of Civil Aviation and the U.S. aviation authorities, the American governmental organs abrogated the above-mentioned agreement between Aeroflot and

Pan American Airlines. As its principal argument the American side put forth the extremely unconvincing point about the so-called "imbalance," i. e.,the inequality in the sphere of hauls. Despite the fact that the Soviet side during these talks and subsequently proposed a number of specific measures for evening out this imbalance and, in particular, proposed the establishment of favorable rates for carrying tourists as well as more advantageous commercial conditions--all our proposals were rejected by the American side, which set forth its clearly unacceptable demands as an ultimatum. This position of the American side laid the foundation for a lengthy campaign, aimed at curtailing the aviation links between the USSR and the United States. As you can see, the aim at complicating matters was undertaken long ago: the masters of the American military-industrial concerns are vitally interested in maintaining international tension and in the arms race. Thus and only thus, in my opinion, can these facts been qualified.

/Question/ Judging by everything, such a position on the part of the American authorities was subsequently expressed in certain following actions and decisions; is that right?

/Answer/ Yes, the matter turned out exactly that way. Immediately after this, the American authorities prohibited all their tourist firms and airline companies, except Pan American, from making out tickets for trips on Aeroflot's airplanes from the United States and the USSR. At the same time, the State Department prohibited Pan American from engaging in any sort of negotiations with Aeroflot's representatives, and this was also a gross violation of the Agreement on air transportation between the USSR and the United States.

Such interference in the commercial relations between Aeroflot and Pan American led to a situation whereby in October 1978 the latter completely cut cut its regular flights to Moscow, and subsequently the administration of President Reagan used this as a pretext for halting flights by Aeroflot's airplanes to the United States.

/Question/ The readers of LITERATURNAYA GAZETA and the Soviet public in general are well aware of numerous facts of provocations by American authorities against Aeroflot. LITERATURNAYA GAZETA and the entire Soviet press have written a great deal about this. And even certain American newspapers could not pass over this topic in silence.... What can you tell us on this score?

/Answer/ The USSR Ministry of Civil Aviation has at its disposal quite a bulky and, I would say, melancholy dossier on this topic. Let me recall certain events for you....

August 1979. In New York at Kennedy Airport, in violation of all existing norms of international law, the American authorities illegally detained an Aeroflot airplane with passengers on board.

January 1980. A bomb was exploded in the Aeroflot office at 545 Fifth Avenue, New York. The area was devastated. Only by some fortuitous chance there were no human victims....

In that same January 1980 an Aeroflot airplane was flying its regularly scheduled trip from Moscow to New York. Among the passengers on board was also the Soviet Union's ambassador to the United States, Comrade Dobrynin.... During this flight at the control center of the New York airport malefactors fouled up the operation of the computer which was controlling the approach and landing of the Soviet airplane. Only the courage, experience, and skills of the Soviet crew made it possible for an accident to be averted.... Moreover, such a provocation comes under the heading of an appropriate article of American law which provides for the death penalty or life imprisonment for an attempt on the safety of flights. The U.S. State Department could not deny the premeditation of the actions which led to this incident. Nevertheless, the persons who took part in this crime were let off, as it is said, with a mild admonition....

Finally, on 12 May 1981 in Washington at the Dulles Airport armed agents of the FBI carried out a bandit-like raid on an Aeroflot airplane; they unceremoniously opened up and searched the passengers' baggage, including that of diplomats. Furthermore, these agents made no secret of the fact that they were acting on orders from above....

/Question/ But whose hands do such provocations play into?

/Answer/ The whole world knows how much good came out of detente, the initiator of which was our great country, our Communist Party, and Leonid Il'ich Brezhnev personally. Detente not only strengthened peace on Earth and the security of nations but also facilitated the setting up of commercial cooperation between countries and peoples. That is why we are convinced that the attempts to do away entirely with the many years of Soviet-American cooperation in the field of civil aviation, no matter behind what smoke-screen they may be carried out, run counter, above all, to the interests of the American people and, in particular, those many thousands of Americans who have been deprived of the possibility of using the direct, most economical, and shortest air transportation when taking trips to our country.

Being fully aware of the importance of the Soviet-American aviation ties--Boris Pavlovich Bugayev stated in conclusion--I am assuming that, in the final analysis, common sense will prevail.

2384
CSO: 1829/170

AIR

FOREIGN USERS OF TU AIRCRAFT NOTED

Moscow FOREIGN TRADE in English No 3, 1982 p 16

[Text] The Soviet Union is a major exporter of aircraft and aviation equipment. During the last 20 years the All-Union Association Aviaexport has sold over 4,000 aircraft and helicopters on the foreign market. Soviet airliners form the fleets of the socialist community countries' air companies. Malev (Hungary), Balkan (Bulgaria), Interflug (GDR), ČSA (Czechoslovakia), LOT (Poland), Cubana de Aviación (Cuba) operate about 200 TU-type aircraft. The Yugoslavian air company, Aviagenex, uses TU-134 and TU-134A for charter operations. The TU-134, TU-154 aircraft and their derivatives are the major commercial air carriers of the socialist countries. They have been used for intensive international passenger operations over the past decade.

Aviaexport, enterprises of the USSR Ministry of Aviation Industry and the A.N. Tupolev Research and Design Bureau render the socialist countries' air lines considerable assistance in operating Soviet aircraft. At the end of 1981 Aviaexport and the Tupolev Research and Design Bureau convened a meeting to discuss the results of operating the TU-134A and 154A airliners with relevant socialist countries' foreign trade organizations and air-line companies. Representatives of the following air-line companies: Interflug, Malev, ČSA, LOT, Balkan, Tarom, Cubana de Aviacion, Aviagenex and representatives from the Korean People's Democratic Republic Civil Aviation main administration department were present.

V.S. Studenikin, Aviaexport's General Director, A.A. Tupolev Chief aircraft designer, and other speakers outlined in their reports the results of the Research and Design Bureau's activities directed at improving the TU-134 and TU-154 airliners' technical characteristics.

During the meeting the participants learnt of the TU-134A-3, TU-134B and 154M aircraft (latest derivatives of the TU-134 and TU-154), whose improvements were planned to increase operation efficiency and decrease fuel consumption. The air-lines representatives had the opportunity to inspect the new models at Sheremetyevo international airport.

The activities of the A.N. Tupolev Research and Design Bureau, directed at modernizing these aircraft, were highly appraised by the participants.

In the picture: *the Soviet air liners at the Sheremetyevo 2 international airport.*

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CSO: 1812/75

AIR

GROUND-CONNECTED DIRIGIBLE 'TROLLEY' SYSTEM TESTED

Moscow SOVETSKAYA ROSSIYA in Russian 11 Feb 82 p 4

[Article by Fayzrakhmanov, Ufa: "Trolley Airbus"]

[Text] The Ufa Petroleum Institute has successfully tested a model of the world's first electrical air transportation system using a dirigible. It was created by docent Georgiy Ivanovich Vasil'yev and Professor Aleksandr Ivanovich Spivak, rector of the institute.

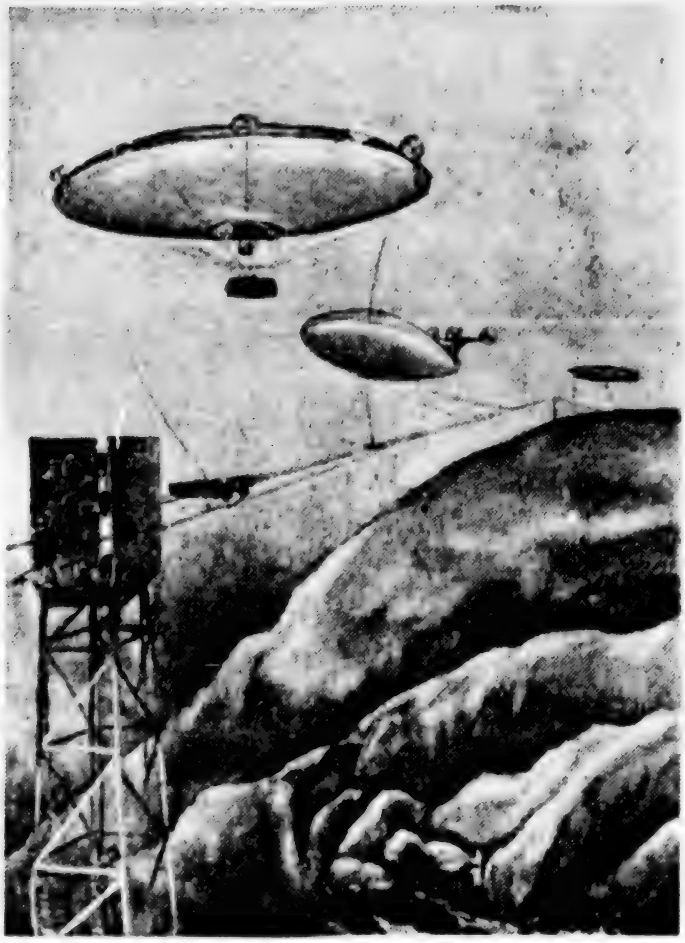
"Come on, I will give you a ride," Georgiy Ivanovich suggested and led us into the auditorium of the institute.

The room was empty. The chairs and desks had been removed for the tests. Under the high vault of the ceiling a cigar-shaped dirigible stood next to the light fixtures. Vasil'yev went behind the tiny telephone console.

"Cast off the moorings!" Vasil'yev instructed, mostly speaking to himself. We could see that he felt anxiety and triumph at the same time. Two pusher propellers beneath the nose and tail of the ship started humming, picking up speed. The dirigible took off! You could also say it drove off. Both are correct.

The point is that from our corner to the other corner where Vasil'yev stood, metal support towers were mounted in a row on the floor with wires extending to them. It looked like a real power transmission line. Two current collector trolleys were dropped from the dirigible to this "track." In short, the unusual transportation system resembled a trolley line, except that the "trolley dirigible," filled with noncombustible helium, was not under the catenary system of wires, but rather moved above it.

He turned the handle of the rheostat and the trolley airbus began to pick up speed. A 20-kilogram load was suspended under the "belly" of the ship. At present the route is just 15 meters long, from one corner of the auditorium to the other. Vasil'yev motioned with his head at a picture on the window sill. It depicted a fantastic scene with a cableline stretching over mountain ridges and cigar-shaped dirigibles floating above it. That was it! The picture seemed to come to life when we looked back at the trolley airbus



The photograph shows G. I. Vasil'yev's conception of the transportation system in action. (Photo by R. Badykov.)

going back and forth in front of us. Now it was easy to imagine that passengers on the bus would be able to observe forests, ravines, and mountain tops flashing by beneath them from bird's-eye level.

Indeed, the most advantageous place to build such a transportation system is on rugged, swampy terrain. The designers believe that the new type of transportation will be used in inaccessible regions of Siberia, the Far North, and the Far East. After all, building just one kilometer of highway in these regions costs the state more than 1 million rubles, while this kind of dirigible line could be built for 20,000 rubles.

"How was the idea of the trolley airbus conceived?" Rector A. Spivak paused briefly to think. "Our institute is taking an active part in carrying out the state program for Western Siberian petroleum and gas. Therefore, we often have to go to Northern Tyumenskaya Oblast and other points of the region. The earth's interior there is rich, but it takes so much work to extract its contents and bring it out. I saw heavy machinery stuck in the marshes, all-terrain vehicles which were completely helpless there, like flies in honey. Northern Siberia poses many problems. Upon returning to Ufa, I told my colleagues what I had seen. That is how the work began, far more accurately, the search for ideas."

Along with the tests, scientists at the institute made numerous technical-economic calculations. The Ufa dirigible can be used as either a passenger trolley or to carry heavy loads. It could travel 80 kilometers an hour carrying up to 300 tons. And it does not require expensive fuel; it runs on electricity.

K. Tsiolkovskiy said, "The question of dirigibles is a vast question." But attempts to put the dirigible to work for people did not achieve the desired result. The dirigible was more obedient to wind currents than to the will of its designers.

"The whole trouble was that these flying craft were not tied to the ground," Vasil'yev said. "Our cable line is what gives the dirigible all the necessary properties. It makes it possible to remove static electricity, and a triple margin of safety is assigned for the cables. Wind pressure is alleviated by reversible motors that turn the body of the "trolley" downwind. The dirigible can be controlled either by a pilot or an operator on the ground.

11,176
CSO: 1829/176

DIRIGIBLE TRANSPORTATION SYSTEM IN TESTING STAGES

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 6 Mar 82 p 4

[Interview with Oleg Aleksandrovich Chembrovskiy, professor and doctor of technical sciences, on the occasion of dirigible tests at the USSR Ministry of Power and Electrification; date not specified: "The Dirigibles Want To Fly"]

> [Excerpts] Have you ever seen dirigibles? No, not in the movies, but real ones? Those who are over 50 years old may perhaps have seen them...
>
> So then, are dirigibles a thing of the past? But if that is true, how can we understand what took place recently in the conference of the USSR Ministry of Power and Electrification?
>
> One after the other, two orange and white cigar-shaped ships with tail fins, connected by lines and with two motors mounted on metal suspension, rose easily into the air, stopped, and then, as if having thought it over, moved forward on the horizontal. They floated over me so low that I could reach them with my hand, and they blew a stream of air from the propellers on me. The dirigible with the side lettering "ELAS" made circles in its assigned space, rose higher and higher, descended, moved backward, and carried loads. In general, it did absolutely everything it was ordered to.
>
> Although this was just a model, it was very impressive: six meters long and more than 3.5 meters on the vertical. But the actual one will be 10 times larger! The operation of the system was explained by professor Oleg Aleksandrovich Chembrovskiy, doctor of technical sciences who was present at the demonstration of the ELAS. We introduced ourselves to him and had the following talk.

[Question] I do not understand where we are in this room today. Is it the past or the future?

[Answer] And in the present also (Oleg Aleksandrovich smiled). That is because in addition to the dramatic past and, in my opinion, great future of dirigible building, there is also a present day. And for me and my colleagues it is full of very interesting work.

[Question] But what need is there to bring the dirigible back from the seemingly irrevocably lost past? After all, we today have a great many classes of airplanes and helicopters.

[Answer] Nonetheless, there is a need to add aerostats to these flying craft. Life itself raised the question of bringing them back. Here is just one example. During development of raw material and fuel-energy resources, people moved far into northern and eastern regions. It became incredibly hard to deliver freight, especially large items, to these regions with impassable forests, peat bogs, and marshes. Construction of roads and aircraft landing strips is not cheap; it costs the state millions of rubles.

The dirigible does not need such areas. Using it in the national economy will enable us to avoid building certain road sectors and allow us to deliver necessary freight to its destination more quickly.

[Question] If these slow ships are so good, why did they disappear?

[Answer] It sometimes happens that the level of technical development at a particular moment does not permit optimal realization of a scientific or engineering idea. This applies perfectly to dirigibles. They were unlucky. A whole series of dirigible disasters struck the world in the 1930's. Why? It was because the material of the skin of the ships was easily punctured and hydrogen, the gas with which they were filled, ignites easily.

Years passed. Excellent synthetic materials and protective films appeared, as did fire-safe helium, and on the wave of technical progress those who loved dirigibles again had hope that they would see them in the sky.

[Question] At the present time, Oleg Aleksandrovich, you are head of the experimental design division of Energoaerotrans [Energy Aerial Transportation] at Orgenergostroy [All-Union Institute for Planning Power Construction Organizations]. Tell us, please, about the work of your division.

[Answer] For many years many cities in the country have had public design bureaus where amateur dirigible builders developed their dirigible designs. But Energoaerotrans is the first official organization in our country involved in this work. It was set up just a year ago and has quickly accumulated a group of excited workers and knowledgeable specialists.

We can already say that we are not simply designing dirigibles. We design dirigibles for specific jobs and perform specific orders for two USSR ministries, the Ministry of Power and Electrification and the Ministry of Timber, Pulp and Paper, and Wood Processing Industry. They were the first to support our project.

[Question] What is attractive about the ELAS? What is it, and what kind of job is it being prepared for?

[Answer] ELAS is an acronym for the Russian word that means energy flying craft for construction and installation work. It can develop speeds up to 120 kilometers an hour, cover significant distances, and haul loads of up to eight tons. It is a combined aircraft which is lifted and maintained by two forces, aerostatic and dynamic. It does not require ballast, which is mandatory for a dirigible in the ordinary sense of the word. Series-produced engines from AN-2 airplanes, known for their low power saturation, will be mounted on the ELAS.

Economists have already calculated that fuel consumption, the cost of an hour in the air, and the cost of a unit of transportation work will be many times lower for the ELAS than for airplanes and helicopters.

But, to put it this way, airplanes have their place. No one is attacking the reputation and position of airplanes or helicopters. They have plenty of work. But it is time to transfer a part of it to our ELAS, at least.

Its first flights will be to participate in construction of power transmission lines in inaccessible regions. But it will not simply be a delivery vehicle that carries metal support towers to their destinations; it will also be an overhead crane with which they can be precisely mounted.

Our dirigible has one other job in the immediate future, participation in logging operations. I can even give you the address, the Zabaykalles [Transbaikal Forest] Association.

[Question] It appears that there is no reason to worry about the future of the ELAS. It will become a reality. But what comes after it? What did you have in mind when, in beginning our talk, you mentioned the great future of dirigible building?

[Answer] In the conditions of the heightened energy crisis, many countries in the world faced the problem of building economical combined flying craft with large load capacities.

In Canada, for example, they are developing an airship designed to deliver petroleum and gas (2,700 tons) from distant Arctic islands, and the United States has projected an airborne crane to deliver and install loads weighing up to 1,000 tons. In England they are developing a ship with a load capacity up to 500 tons that can load and unload in flight by means of helicopters. And, of course, we too will be working to build ships with large load capacities.

What other prospects can we see for using giant airships? They can be "fire towers" from which it is possible to spot fires quickly and take prompt steps to put them out. Some day, when they achieve the proper altitude, aerostats will be able to serve as radio and television relay units, and also to relay electric power, which will make power transmission lines unnecessary. Another interesting idea is to use dirigibles for wind energy. Air turbines mounted on aerostat systems will receive strong winds and produce as much energy as large hydroelectric power plants.

These are not the projects of today, or even tomorrow. Perhaps we are already looking at the 21st Century. But this is no longer science fiction, it is an entirely feasible idea. But in the meantime, we have the almost real ELAS.

[Question] I looked at it and for some reason compared it with a large fish in an aquarium. Although the hall is large and high, still even the model appears crowded here. It would like to be free, and fly in the ocean of air.

[Answer] That is our main dream. That is why we are happy to work from morning until late at night at Energoaerotrans. And we hope very much that the first flight will take place this year.

11,176
CS: 1829/176

PARTY GROUP PROMOTES BETTER VEHICLE EQUIPMENT

Moscow MOSKOVSKAYA PRAVDA in Russian 10 Mar 82 p 2

[Article by O. Belan: "Report at the Party Committee"]

[Excerpt] On 1 June 1981 the party committee of the Central Scientific Research Institute of Motor Vehicles and Vehicle Engines (NAMI) at its meeting heard a report from the party group that joins the communists of three divisions, the divisions of reliability of vehicle equipment, the repairability of vehicle equipment, and the division for setting norms of spare part use.

Party group organizer V. I. Fomichev said, "If we recall the principal events of the year that has passed since the 26th Congress of the CPSU, it is easy to pick out the mile posts in the life of our party group and the entire party organization of NAMI. Above all there is the initiative put forth by the Gidroproyekt [All-Union Planning, Surveying, and Scientific Research Institute imeni S. Ya. Zhuk] Institute. It was supported by all subdivisions of NAMI, but the first was the party group of our divisions. This is by no means accidental, for everything that we are working on is linked above all to reducing labor-intensiveness, increasing engine life, and cutting the use of spare parts.

"And for the party group itself, the party committee meeting that heard our report was a real test.

"On that day when we at our meeting decided to support our colleagues at Gidroproyekt, we worked out and adopted additional socialist obligations. I will not go through all the points of them now. But here is just one specific: the ZIL-130 truck now goes 360,000 kilometers before major overhaul, and the MAZ goes 300,000. And we want to increase these figures to 400,000 and 350,000 kilometers."

(From the Record of the Party Committee Meeting)

It is not clear from the party group organizer's report how the party group is influencing the production affairs of the collectives of the divisions by its work. The report presented the final results of their work, but did not say what the party group had done to achieve this.

V. I. Fomichev said, "This is the second year that the communists have elected me head of the party group. It is not a simple job, and I still have a lot to learn. In this sense the party meeting which heard the report of the party group was a major lesson for all the communists.

"We try to take account of the criticism given by the party committee immediately. For example, let me mention the decision of the party group to take a more active part in writing plans for the divisions. In my opinion this is very important today, for the collectives of the divisions face a challenge of national importance: produce scientific recommendations for other subdivisions of NAMI and manufacturing plants to reduce fuel use. As an example, the socialist obligations of the division of reliability of vehicle equipment contained concrete figures: Zil'-130 trucks must cut fuel expenditures 3.5 percent and GAZ-53A and GAZ-52 trucks must achieve a 10 percent reduction. These are large figures, so we will have to work very hard."

11,176
CSO: 1829/158

AUTOMOTIVE INDUSTRY BOARD OF DIRECTORS CRITICIZED

Moscow EKONOMICHESKAYA GAZETA in Russian No 7, Feb 82 p 4

[Article by V. Vavilov: "There Is No Reason for Complacency"]

[Text] The automotive industry is one of the leading sectors of our machine building. The results of its work last year and its tasks for 1982 were discussed at an expanded meeting of the board of directors of the ministry and the presidium of the central committee of the trade union.

Minister of the automotive industry V. N. Polyakov presented a report. He observed that in the first year of the five-year plan the sector moved ahead in all primary directions of raising production efficiency, furthering scientific-technical progress, and increasing the production of high-quality vehicles. The report gave a detailed description of the results of the economic activity of associations and plants. The volume of production last year was five percent over 1980. Growth in labor productivity was four percent. The percentage of output in the highest quality category reached 39.2 percent of all production compared to 38 percent in the plan assignment.

But the sector fell somewhat short of the annual plan because of lagging in the production of a number of types of articles. Seventy-two percent of the enterprises of the Ministry of Automotive Industry did not completely fulfill their plans for delivery of output on the basis of contracts.

Improvement of the economic mechanism in the automotive industry is still going slowly. Unfortunately, the shortcomings that exist in this area were not reviewed in detail by the report or the discussion that followed and it is not accidental that this unself-critical approach to the use of new plan indicators and indicators to evaluate work results was reflected in the decree adopted at the expanded meeting of the board of directors of the Ministry of Automotive Industry. The decree states as follows: "Preparatory work is practically completed toward realization of measures for further improvement of all elements of the economic mechanism in the sector." There is no reason for such complacency.

It was correctly said at the meeting of the board of directors that the plan for production of output can be met only if the assignment for conservation of metal is fulfilled. In fact the use of rolled steel in 1981 was reduced just 1.7 percent by lowering expenditure norms, although the plan called for 3.6 percent. As one of the speakers noted, the situation with norms in the sphere of metal consumption cannot be defended.

The prime cost of output for the ministry was planned to decrease by 0.4 percent last year; in fact it rose by 1.2 percent.

We must expect that the board of directors of the Ministry of Automotive Industry will conduct a special review of the question of improving the economic mechanism in the sector in light of the resolutions of the November 1981 Plenum of the CPSU Central Committee.

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DIESEL ENGINES: IMPROVEMENTS NOTED, TABLE OF SPECIFICATIONS GIVEN

Moscow MEKHANIZATSIYA STROITEL'STVA in Russian No 3, Mar 82 pp 12-14

[Article by D. D. Bagirov, doctor of technical sciences, and A. V. Zlatopol'skiy, candidate of technical sciences" "Raise the Technical Level of the Diesel Engines of Construction and Road Machinery"]

[Text] The document "Basic Directions of Economic and Social Development of Our Country for 1981-1985 and During the Period Until 1990" envisions a further significant rise in the technical level and quality of manufacture of internal combustion engines. It envisions increasing the production of diesel engines with good technical-economic indicators, in particular for fuel economy and reliability, and also building engines for large construction and road machines.

For this purpose it is essential to introduce a whole program of steps to supply engine building enterprises with special equipment, automatic lines, materials, instruments, and electrical, industrial rubber, and other assembly components of improved quality and to plan the development and organization of production of highly efficient engine lubricants. Measures have been planned to raise the level of engine automation by equipping them with electronic automatic control and monitoring systems and automated information-measurement systems.

It is planned to organize systematic testing of the engines produced, both by engine building enterprises and enterprises that use the engines. Tests will be done in conditions and with schedules that correspond to operating conditions and will lead to adoption of steps to improve their level on the basis of test results.

Technical devices are to be developed and brought into production for reducing the toxicity of the exhaust gases of motor vehicle and tractor engines working in areas with restricted air exchange, in particular for lift trucks, mine dump trucks, and T-25, MTZ-80, and T-130 tractors. Low-toxicity tractor diesels are also to be built.

The engine building plants must organize capital repair (major overhaul) of the diesels they produce which will insure that the overhauled engines have a service life of at least 90 percent of the service life of new engines (instead of the present standard of 80 percent for repair plants). At the same time norms for use of spare parts should be appropriately revised and periodically refined taking into account results achieved in raising the technical level of the engine.

All these steps, together with the introduction of progressive design concepts aimed at improving the working process, raising efficiency, and optimizing regulation, as well as refining the technology of manufacture of the most important parts, will make it possible to raise engine indicators.

The basic directions in raising the technical level of diesel engines are the following: increasing power per liter of displacement; reducing specific fuel expenditure and expenditure of lubricants in carbon monoxide fumes; improving reliability (in particular the service life until major overhaul); reducing specific weight; improving ecological qualities; and, simplifying operations.

Increasing power per liter of displacement is being accomplished by boosting engines, chiefly in terms of average effective pressure, by employing progressive combustion chambers, improving formation of the mixture, and using turbocharging. Power is also being boosted by increasing the frequency of rotation of the crank shaft.

The specific expenditure of fuel is reduced by improving the processes of mixture formation and combustion, the use of turbocharging, improving gas distribution systems, reducing mechanical and gas dynamic engine losses, and optimizing the parameters of the fuel equipment and regulators.

The lubricant consumption for carbon monoxide depends chiefly on the toxicity and quality of manufacture of the parts of the cylinder-piston group and the quality of the lubricant.

Reliability is raised by creating rational part designs, improving the systems for cleaning the air, oil, and fuel, introducing automatic regulation of thermal conditions, improving the quality of manufacture and assembly of engine, using antiwear surfacing and progressive materials, and using highly efficient motor oils during operation.

Specific weight is reduced mainly by increasing the power per liter of displacement and using progressive materials in engine manufacture.

The toxicity and smokiness of exhaust gases are reduced by improving the processes of mixture formation and combustion, using rational engine regulators and improving their regulation systems, and using special trap devices.

Engine maintenance during use is simplified by realization of design and industrial measures which provide an increase in the periods between scheduled repairs and simplify service operations, increase operating life between overhauls, and achieve similar service life for the most important parts that are subject to wear.

Марка дизеля (1)	Завод-изготовитель (2)	Число и расположение цилиндров (3)	Номинальная мощность, л.с. (4)	Частота вращения, об/мин (5)	Удельный расход топлива, г/(л.с.·ч) (6)	Расход масла на угар, % к расходу топлива (7)	Литровая мощность, л.с./л (8)	Удельная масса, кг/л.с. (9)	Срок службы до капитального ремонта, ч (10)	Область основного применения (11)
Tractor Diesels										
(D-21A) Д-21А	Владимирский тракторный (12)	2P	25	1800	180	0.8	13	9	6000	Виброплиты, самоходные катки, колесные бульдозеры, асфальтоукладчики, распределители цементобетонных покрытий (13)
(D-120) Д-120		2P	32	2000	180	0.8	15.4	7.6	6000	
(D-144) Д-144		4P	63	2000	180	0.8	15.2	5.3	6000	
(D-240) Д-240	Минский моторный (14)	4P	77	2200	180	0.8	16.2	5.1	6000	Колесные бульдозеры, многоковшовые экскаваторы, многоковшовые погрузчики, снегоочистители, автопогрузчики (15)
(SMD-14N) СМД-14Н	Харьковский «Серп и молот» (16)	4P	83	1800	180	0.8	13.1	8.1	6000	Гусеничные бульдозеры, экскаваторы, тягачи скреперов, автогрейдеры, колесные гусеничные погрузчики, грейдерэлеваторы, самоходные краны, снегоочистители (17)
(SMD-17KN) СМД-17КН		4P	83	1800	180	0.8	13.1	6.9	4 hrs	
(SMD-18KN) СМД-18КН		4P	104	1900	180	0.8	16.4	6.3	4 ″	
(SMD-60) СМД-60	Харьковский тракторных двигателей (18)	6V	150	2000	180	0.8	17.5	5.8	6000	Бульдозеры, тягачи скреперов (19)
(SMD-62) СМД-62			175	2100	180	0.8	19.1	5.3	6000	
(AM-41) АМ-41	Алтайский моторный (20)	4P	94	1750	180	0.8	12.6	8.9	5000	Экскаваторы, автогрейдеры, самоходные катки, асфальтоукладчики, снегоочистители (21)
(A-01M) А-01М		6P	135	1700	180	0.8	12.1	7.7	6000	Гусеничные бульдозеры, экскаваторы, тягачи скреперов, автогрейдеры, колесные погрузчики, самоходные асфальтоукладчики (22)
(D-108) Д-108	Челябинский тракторный (23)	4P	108	1070	175	0.9	8	19.1	8000	Гусеничные бульдозеры, экскаваторы, тягачи скреперов, гусеничные погрузчики, рыхлители, дорожные фрезы (24)
(D-160) Д-160		4P	167	1250	180	0.8	12.3	10.8	6000	Гусеничные бульдозеры и погрузчики, дорожные фрезы (25)
(D-180) Д-180	Брянский автомобильный (26)	6P	180	1100	168	0.8	8.4	15.3	6000	Гусеничные бульдозеры, тягачи скреперов (27)
(YaMZ-238NB) ЯМЗ-238НБ	Ярославский моторный (28)	8V	215	1700	175	0.8	14.5	5.3	6000	Колесные бульдозеры, тягачи скреперов, колесные погрузчики (29)
(YaMZ-240B) ЯМЗ-240Б		12V	300	1900	175	0.8	11.5	5.6	6000	
(NB-30V) НБ-30В	Челябинский тракторный (30)	12V	310	1500	175	1	8	3.5	8000	Гусеничные бульдозеры, рыхлители (31)
(8DVT-330) 8ДВТ-330	Челябинский тракторный (23)	8V	370	1700	180	1	16.4	4.5	—	Гусеничные бульдозеры и погрузчики, рыхлители (32)
Truck Diesels										
(YaMZ-236) ЯМЗ-236	Ярославский моторный (28)	6V	180	2100	170	0.8	16.2	5	6000	Самоходные краны, грузовые автомобили (33)
(YaMZ-238) ЯМЗ-238		8V	240	2100	170	0.8	16.2	4.4	6000	Экскаваторы, самоходные скреперы, самоходные краны, снегоочистители, грузовые автомобили (34)
(YaMZ-238N) ЯМЗ-238Н		8V	320	2100	175	1	22	3.2	6000	
(YaMZ-240) ЯМЗ-240		12V	360	2100	175	1	16.2	4.6	6000	Самоходные скреперы, грузовые автомобили (35)
(YaMZ-240N) ЯМЗ-240Н		12V	500	2100	175	1	22.4	3.4	6000	
(KamAZ-740) КамАЗ-740	Камский автомобильный (36)	8V	210	2600	170	0.6	19.3	3.5	6000	Грузовые автомобили (37)
General-Purpose Diesels										
(U1D6-04 (6Ch15/18)) У1Д6-04 (6Ч15/18)	Свердловский турбомоторный (38)	6P	175	1500	165	1.3	7.5	7.2	15 000	Экскаваторы, автогрейдеры, снегоочистители (39)
(U1D6-250TK-04 (6ChN15/18)) У1Д6-250ТК-04 (6ЧН15/18)		6P	250	1500	160	0.8	10.5	5.6	14 000	
(1D12BM (12Ch15/18)) 1Д12БМ (12Ч15/18)	Барнаульский «Трансмаш» (40)	12V	400	1600	170	1.5	9.8	3.8	5000	Машины для скоростного строительства дорог, снегоочистители, грузовые автомобили (41)
(M756B (12Ch18/20)) М756Б (12Ч18/20)	Ленинградский «Звезда» (42)	12V	1000	1500	160	1.8	16	1.9	12 000	Самоходные скреперы, грузовые автомобили (43)

Key:
(1) Brand of Engine;
(2) Manufacturing Plant;
(3) Number and Arrangement of Cylinders;
(4) Rated Power, Horsepower;

[Key continued, next page]

[Key continued]

(5) RPM's;
(6) Specific Expenditure of Fuel, grams per horsepower-hour;
(7) Expenditure of Lubricants through Exhaust, percent of fuel expenditure;
(8) Power per Liter of Replacement, Horsepower per Liter
(9) Specific Weight, Kilograms per Horsepower;
(10) Service Life Until Major Overhaul, Hours;
(11) Primary Areas of Use;
(12) Vladimir Tractor Plant;
(13) Vibration Slabs, Self-Propelled Rollers, Wheeled Bulldozers, Asphalt Layers, and Distributors of Cement-Concrete Surfacing;
(14) Minsk Engine Plant;
(15) Wheeled Bulldozers, Multiscoop Excavators, Multiscoop Lift Trucks, Snow Plows, and Snow Trucks;
(16) Khar'kov Serp i Molot Plant;
(17) Caterpillar Bulldozers, Excavators, Scraper Tractors, Truck Graders, Wheeled and Caterpillar Lift Trucks, Grader-Elevators, Self-Propelled Cranes, and Snow Plows;
(18) Khar'kov Tractor Engine Plant;
(19) Bulldozers and Scraper Tractors;
(20) Altaysk Engine Plant;
(21) Excavators, Truck Graders, Self-Propelled Rollers, Asphalt Layers, and Snow Plows;
(22) Caterpiller Bulldozers, Excavators, Scraper Tractors, Truck Graders, Wheeled Lift Trucks, Self-Propelled Rollers, and Asphalt Layers;
(23) Chelyabinsk Tractor Plant;
(24) Caterpillar Bulldozers, Excavators, Scraper Tractors, Caterpillar Lift Trucks, Rippers, and Road Cutters;
(25) Caterpillar Bulldozers and Lift Trucks, and Road Cutters;
(26) Bryansk Automotive Plant;
(27) Caterpillar Bulldozers and Scraper Tractors;
(28) Yaroslavl' Engine Plant;
(29) Wheeled Bulldozers, Scraper Tractors, and Wheeled Lift Trucks;
(30) Chelyabinsk Tractor Plant;
(31) Caterpillar Bulldozers and Rippers;
(32) Caterpillar Bulldozers and Lift Trucks, and Lifters;
(33) Self-Propelled Cranes and Trucks;
(34) Excavators, Self-Propelled Scrapers, Self-Propelled Cranes, Snow Plows, and Trucks;
(35) Self-Propelled Scrapers and Trucks;
(36) Kama Truck Plant;
(37) Trucks;
(38) Sverdlovsk Turboengine Plant;
(39) Excavators, Truck Graders, and Snow Plows;
(40) Barnaul Transmash Plant;
(41) Machines for High-Speed Road Construction, Snow Plows, and Trucks;
(42) Leningrad Zvezda Plant;
(43) Self-Propelled Scrapers and Trucks.

The main indicators of diesel engines installed in construction and road machinery and trucks should be raised substantially by 1985. For example, the fuel consumption of all tractor and truck engines (except the D-120) is to be lowered to 160-175 grams per horsepower-hour. Oil consumption is to be lowered to 0.4-0.8 percent of fuel consumption, and the service life until major overhaul should be raised to at least 8,000. For general-purpose diesels these figures should be, respectively, 160-165 grams per horsepower-hour, 0.7-1.3 percent, and 12,000 hours.

Plans envision broad introduction of turbochargers on engines being produced and standardizing new models of engines with those already in production. For example, the power output of the D-144 diesel should be raised to 85 horsepower by the use of turbocharging. At the same time, production of a V-8 air-cooled engine of the same dimensionality (ratio of the diameter of a cylinder to the piston stroke) with a 150-horsepower turbocharger will be brought into production. A modification of the D-240 diesel with a 105-horsepower turbocharger, as well as a six-cylinder model of the same dimensionality with 150 horsepower are to be built.

Plans contemplate building a turbocharged modification of the SMD-17KN diesel boosted to 145 horsepower by average effective pressure. A 260-horsepower turbocharged V-8 engine is to be built on the basis of the SMD-60 diesel using the same dimensionality. By using a turbocharger the power output of the A-41 diesel will be raised to 125 horsepower and the A-01M to 175 horsepower. It is contemplated that the power output of the D-160 diesel will be raised to 200 horsepower by increasing the level of supercharging.

A V-8 turbocharged diesel which develops 440-600 horsepower at 1,900 rpm's and has a dimensionality of 165/170 is being built for industrial tractors. At the same time, a standardized general-purpose engine of the same dimensionality with power up to 800 horsepower for frequency of rotation to 2,200 rpm's is being built.

A new series of YaMZ truck diesels with 140/140 mm turbochargers will be developed. It will include a V-8 model with 360 horsepower at 2,200 rpm's and a 12-cylinder engine with 650 horsepower at 2,200 rpm's. A tractor engine with 330 horsepower at 2,000 rpm's is to be developed on the basis of the first. At the same time, plans envision building a standardized general-purpose engine of the same dimensionality in a 12-cylinder version with up to 600 horsepower at 1,500 rpm's.

The power output of the KamAZ-740 diesel should be raised to 260 horsepower by the use of turbocharging.

Plans call for building diesels for the ZIL and GAZ trucks. For the ZIL trucks it will be a V-8 liquid-cooled engine with dimensionality of 110/115 millimeters and 185 horsepower at 2,800 rpm's. The engine for the GAZ trucks will be a six-cylinder engine with cylinders arranged in a row, air cooling, dimensionality of 105/120 millimeters, and 125 horsepower at 2,800 rpm's.

The table gives the basic specifications of the engines designed for construction and road machinery that are in series production and being prepared for production.

The measures enumerated here will significantly raise the technical level of internal combustion diesels in the 11th Five-Year Plan.

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MOTOR VEHICLE

BRIEFS

NEW SELF-PROPELLED CHASSIS—L'vov. The self-propelled chassis developed at the L'vov Polytechnic Institute is highly maneuverable. Turning easily in a small area, it can approach a platform with any of its sides forward. The lack of the steering system does not diminish the performance of the vehicle. Each of its four wheels has a "hidden" reducer motor. Special electrical lines modify the rate of revolution of the right or left wheels, forcing the vehicle to move in the necessary direction. The new system will find application in building electric vehicles and tractors. [Text][Moscow SEL'SKAYA ZHIZN' in Russian 3 Feb 82 p 1] 11176

URAL FARM TRUCKS—Miass (Chelyabinskaya Oblast)—The Ural Automotive Plant has built a farm tractor-trailer rig with good off-road capability. The rig can perform many transportation and production operations. The state commission recommended it for series production. An important challenge of the five-year plan is being met. The Ural-5557 truck has a KamAZ-740 diesel engine with a wide range of speeds for work under field conditions. The wide tires with regulated pressure hardly disturb the soil structure at all. Special trailers can be unloaded on three sides, with controls in the cab, and the rig has a load capacity of up to 14 tons. It is equipped to apply mineral fertilizers to the soil. The enterprise has begun preparing for industrial production of these tractor-trailer rigs. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 3 Feb 82 p 1] 11176

ANNIVERSARY KURGAN BUS—Kurgan-One out of five buses in the country comes from Kurgan. These small, but comfortable vehicles are well known to the oil workers of the northern Tyumen' region, the cotton growers of Central Asia, land improvement workers in the Nonchernozem zone, and construction workers on the Baikal-Amur Mainline. They are convenient to operate, and are in great demand among the rural population. The automotive plant recently produced its 200,000th vehicle. It was presented to the Krasnogvardeyskiy Sovkhoz in Katayskiy Rayon in a ceremony. The plant workers are to produce 17,700 buses this year. This figure includes 300 buses in a northern modification, 200 for the oil workers of Tyumen', and 20 heavy-duty lift trucks. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 3 Feb 82 p 1] 11176

PAMIR ROADS IMPROVING—Tajik SSR—Modern vehicle roads have been built in Gorno-Badakhshanskaya Autonomous Oblast. Convoys of trucks carrying freight for the national economy travel year round from Dushanbe to Khorog, Murgab, and Osh.

The roads of the Pamir are constantly being improved. The many long climbs and descents are disappearing, and the roadway is being widened. They are expanding the road system, and today the most remote high-mountain settlements are linked by roads with the main highway. [Text] [Moscow STROITEL'NAYA GAZETA in Russian 22 Jan 82 p 2] 11176

NOVGOROD BYPASS COMPLETED—Traffic has begun over a new segment of the highway from Moscow to Leningrad. Road builders cut 50 kilometers from the highway by "straightening" it out and now through transportation does not have to go into Novogorod. [Text] [Moscow EKONOMICHESKA GAZETA in Russian No 51, Dec 81 p 6] 11176

NEW YAROSLAVL' ENGINES—Yaroslavl', 12 Jan (TASS)—The collective of the Yaroslavl' Engine Plant has begun series production of new heavy-duty diesel engines, each one "harnessing" 650 horsepower. The new engines are designed for the large BelAZ mine dump trucks. [Text] [Moscow PRAVDA in Russian 13 Jan 82 p 2] 11176

CSO: 1829/172

RESULTS OF USE OF HEAVIER, LONGER TRAINS EVALUATED

Moscow ZHELEZNODOROZHNYY TRANSPORT in Russian No 8, 1981 pp 52-54

[Article: "At the USSR State Prize Competition--A Large-Scale Reserve for Effective Operation of the Increasing Volumes of Transport"]

[Text] For the 1981 USSR State Prize Competition in the field of science and technology the Ministry of Railways [MPS] submitted the paper "Development and introduction of a comprehensive technology for stepping up railroad freight transport by increasing the weight and length of the trains." The authors' collective included the following: Moscow Railroad chief I. L. Paristyy, engineer of the Moscow-Sorting Station-Ryazanskaya locomotive depot D. V. Vogdanov and of the Orekhovo-Zuyevo depot N. A. Pakhomov, train dispatcher of the Moscow-Ryazansk branch line T. A. Naumova, deputy chief and chief engineer of the Main Administration of Locomotive Operation of the MPS A. N. Bevzenko, car inspector of the Rybnoye car depot V. I. Makarov, deputy director of VNIIZhT [All-Union Scientific Research Institute of Railroad Transportation] Doctor of Technical Sciences V. G. Inozemtsev, chief of the Moscow-Sorting Station-Ryazanskaya locomotive depot A. S. Latushkin, electrician of the Moscow-Pavelets power sector V. F. Kashkin, track brigade leader of the Uzlovskiy division M. P. Kholoptsev, and electrician of the Ryazansk signalization and communications division A. I. Pikin.

The introduction of a comprehensive technology for stepping up freight shipments by increasing the weight and length of the trains was begun on the Moscow Railroad 2 1/2 years ago in January 1979. Now this technology has been put into full operation on all the sections of the railroad. They have organized regular turnover of freight trains with a weight of 6-10,000 tons and a length of 125-225 conventional cars, which considerably exceeds the established norms. In this period more than 580,000 such trains were formed and operated and they transported additionally more than 215 million tons of national economic freight.

As we know, the CPSU Central Committee took note of the important role of the initiative of the innovators of the capital mainline with respect to increasing the weight and length of the trains. It approved their work, looking upon it as one of the big reserves for effective handling of the growing volumes of transport. "The work of the collectives of the Moscow Railroad enterprises," declares the decree of the CPSU Central Committee "is evidence of the presence of large reserves, the use of which will enable the railroads to more fully provide for the transport requirements of the national economy."

The idea of increasing the weight of the train has always attracted the attention of the operational specialists. But the merit of the Moscow Railroad workers and the value of their work lies in the fact that they gave this idea creative substance and translated it into reality. Essentially this means a qualitatively new and higher level for all the operational activity and its technical results. The operation of heavy and long freight trains has been made an element of the railroad system, has become an everyday practice, and is functioning on a mass scale. In the daily turnover there are now more than a thousand trains of increased weight and length, which are transporting over and above the scheduled norms 370-400,000 tons of various kinds of freight.

The essential feature of the new technological procedure developed and introduced on the Moscow Railroad is the fact that the formation and operation of trains of increased weight and length is being carried out under conditions where the length of the station tracks conforms to the length of the trains only at the terminal stations while the capacity of the tracks at the intermediate points is insufficient. Because of this, we have restructured the technological process of operational work in the busiest freight sectors so as to provide for nonstop travel of such trains from one terminal station to another. Organized travel of heavy trains was put into the schedule for the first time in our country. This principle of traffic organization requires minimum capital investments because there is no need to lengthen the tracks at all the stations of the sector. It is also fully in line with the most progressive directions of the organization of train traffic--route planning of shipments and in the future, after the entire fleet of freight cars has been equipped with roller bearings and composition brake shoes, increasing to 500-600 km the stretches of nonstop travel. The work of the Moscow railroad has shown that when the weight and length of the trains are increased, the traffic is maintained at a level which insures a high degree of maneuverability of each individual train with steady movement toward the green light of the automatic blocking system and the maintenance of the scheduled speeds. Since such trains proceed through the sector and usually nonstop along the main tracks of the intermediate stations, the speed of their movement is thereby increased and the expenditures of energy are cut down.

The new method of organization of operation of trains of increased weight and length generated the need for a creative solution of a whole set of complex problems of a technical, organizational and economic character and the preparation and implementation of a number of special measures in all the basic organizations. The road acquired a considerable replenishment of the locomotive fleet through the delivery of more powerful electric locomotives. A great deal of work was done for renovating the existing sorting stations and building new, highly productive ones, for strengthening the upper structure of the tracks, the installations for electric supply, STsB [signalization, centralization and blocking] and communications, and for the introduction of modern technical facilities. A great deal of attention has been focused on the training of personnel. Taking a creative part in this work are the scientists of the VNIIZhT, the MIIT [Moscow Institute of Railroad Transport Engineers] and the VZIIT [All-Union Correspondence Institute of Railroad Transport Engineers], as well as the specialists of the Ministry of Railways.

The operational people have carried out a substantial restructuring of the technological process, especially in the sectors where the capacity of the tracks at the intermediate stations is inadequate. Thus, the run of the long trains was organized in periods of the day when they would not be overtaken by their passenger trains. This also took into account the unevenness and larger volumes of the suburban and distant passenger traffic in the sectors adjacent to Moscow.

In a number of sectors of the railroad with a high level of available traffic capacity (Rybnoye-Voskresensk, Bekasovo-Maloyaroslavets, Moscow-Mozhaysk, Podol'sk-Serpukhov and others) they maintain a parallel schedule of movement of freight and passenger trains, i.e. the traffic is operated without detours. In working out a procedure for the operation of trains of increased weight and length in two-track sectors, where a nonparallel schedule is used (Lyublino-Kursk, Maloyaroslavets-Bryansk, Mozhaysk-Smolensk-Krasnoye) the schedule was prepared so as to provide for special routings where the freight trains are passed by passenger trains at stations with sufficient length of track. In one-track sectors there is a crossover transfer and the long trains are stopped at stations where the length of the track allows for this operation. The points for changing locomotive crews were also transferred to the stations where the length of the tracks corresponds to the length of the freight trains in operation.

One of the basic principles for the preparation of a schedule of movement of trains of increased weight and length is maintenance of a regular supply of them to the centers at intervals which jibe with the technological norms of processing in the yards of arrival and dispatch. The maximum permissible weights and lengths have been defined for each sector of the railroad. On this basis we have established differentiated running times for the trips of the trains of increased weight but the increase in time has not exceeded 2-4 percent and has not generated a need for revision of the schedule. Only in some cases was a partial correction made.

As a result of the rebuilding of a number of the main stations of the road (Perovo, Orekhovo-Zuyevo and others) it became possible, virtually as soon as the 1980 schedule was introduced, to shorten the interval of movement of the trains of increased length to the commonly accepted between-trains interval and thus every train of increased weight and length can operate on all the routes of the schedule. In the 1980 schedule 582 routes in all were laid out for the operation of these trains; this comprises a considerable proportion of the traffic volumes.

Organization of the turnover of freight trains of increased weight and length required a stepping up of the reliability of the technical facilities and especially the rolling stock. This was achieved by working out and implementing a complex of technical measures for improvement of the servicing and repair of the cars and locomotives. At the railroad car technical service points [PTO] measures were carried out for accelerated servicing of the brake system of the trains of increased length, improvement of the density of the brake conduit, and elimination of the air leaks. Specialized crews were organized for the preparation of automatic brakes which are provided with removable gages for checking the charging pressure in the rear part of the train. Additional repair installations were set up to process the trains and the operational communications facilities for the repair workers were improved. At all the PTO's they set up an irreducible reserve of materials and spare parts, especially brake hoses and shoes, terminal cranes, sliding bearings, etc.

To provide for steady operation of the locomotives we strictly observe the time limits and volumes for technical service and repair and we do not allow the operation of trains with a weight in excess of the critical limit. We regularly monitor the condition of the traction motors, the wheel pairs, the main generators, the compressors and the brake control systems, employing the technical diagnostic facilities for these purposes. Measures have been taken to reinforce the traction substations and the contact net installations. The implementation of these measures has enabled us to achieve the lowest relative damage susceptibility on the railroad network. To strengthen the contact net we have installed an additional 245 kilometers of reinforcing wires and 10 parallel coupling points; on five substations we have installed additional rectifiers.

We have carried out work to reinforce the tracks in the sectors where heavy and long trains are operated. The volume of capital repair of the track in these sectors has been increased by nearly 40 percent. This has enabled us to significantly reduce the number of limitations on speed due to the technical condition of the track. We have modernized the STsB installations and eliminated the stopping of a train when the bulbs of the green light burn out on the station signal lights by introducing automatic switching to the yellow light. The reliability of the electrical centralization devices has been increased by the introduction of a scheme for monitoring the condition of the storage batteries and the feed mechanisms of the electric centralization posts. We have also installed duplicate electric traction connectors which improve the conditions for the flow of stepped up traction currents, etc.

On the basis of the results of the VNIIZhT's research we devised methods of operating trains of increased weight and length under the traction and braking conditions indicated in the temporary regulations directives concerning the preparation and management of the brakes on freight trains weighing 6-7,000 tons. In the practical work of our domestic railroads this was the first instance of the suggestion and implementation of a train operated with control exercised simultaneously from two locomotives: at the head and the rear with systems activated for control of the automatic brakes of both locomotives in a common braking mainline system for the train. This solved the problem of supplying compressed air for the braking system of a train weighing 10,000 tons both in the period of release and charging of the automatic brakes and in the process of replacing leakage with minimum drop in pressure through the length of the mainline.

The organization of the operation of trains of increased weight and length and the broadening of the area of their use required, in addition to the technical and organizational problems, the solution of economic incentive problems. There was devised, in particular, a special bonus system which has undoubtedly played a positive role in the development of this movement. It embraces a broad range of occupations: engineers and their assistants, car inspectors, train compilers, dispatchers, track installers, electricians, and others. The special feature of this system is the differentiation in the bonus amounts as per specific rates for each train formed, operated and inspected. Also, each worker knows what he is getting the bonus for and in what amounts.

What result has been obtained by putting heavier and longer trains into operation on the Moscow Railroad and what is the effectiveness of this? Experience shows that the new method yields a considerable economic effect and improves a number of the most important indicators for the work of the railroad. There has been a marked increase in the average weight of a freight train and more economical and better use of the scheduled runs, which is clear evidence of the increased carrying capacity of the sectors. The same fleet of locomotives has been transporting additionally tens of millions of tons of national economic freight.

Regular turnover of heavier and longer trains enabled us to increase the weight of a freight train by 60 tons in 1979 and by 22 tons more in 1980, i.e. by 82 tons in two years as against an average increase in the preceding period of only eight tons. A considerable increase in the weight of a freight train was achieved in the first half of 1981. It was 65 tons more than the figure for the corresponding period last year.

The operation of heavier trains has insured successful fulfillment of the five-year assignment for average train weight. By mid-1980 we had already reached the level stipulated for the end of the five-year plan. Also, nearly all of the increase has taken place in the last two years. Characteristically, this rapid rate of increase of average train weight was achieved despite a considerable decline in the volume of loaded car turnover and an increase in the empty car turnover. The average length of a freight train also showed more than a 2 percent rise. The increase in weight and length of trains on the road has been accompanied by a reduction in the shipment of trains of less than full weight and composition; in two years the number of these has been reduced to 1/6 and 1/2 respectively of the former level. This trend is also being observed at the present time.

One of the important advantages of increasing the weight and length of the trains is the possibility of handling the same freight turnover with a lesser number of trains. For the road as a whole in the sectors of mass operation of heavier and longer trains in 1979 with a 2.2 percent increase in the volume of shipments the number of trains dropped by 4.4 percent and in 1980 with a 5 percent increase in car turnover the number of trains increased by only 1.8 percent.

The reduction in frequency of freight train traffic has had a positive effect on the granting of "windows" for repair and construction work, on the reduction of the layover of ready trains in the shipment yards, and on the cutting down of delays of trains because of unsuitability.

Also increased on the road were the speeds of movement of the trains. Whereas in the 1975-1979 period the route speed fell off during the year by an average of 1.1 percent and the sector speed by 1.7 percent, in 1980 the route speed was increased by 0.9 percent and the sector speed by 2.6 percent.

The increased weight and length of the freight trains is enabling the road to make available for the handling of additional shipments about 100 scheduled trains, 30 locomotives, and 90 locomotive crews; also, to effect a yearly saving in the train traction of nearly 7 million kilowatt hours of electric power. Just from the reduction of operational expenditures the economic effect derived from the organization of movement of heavier and longer trains on the road amounts to 5.3 million rubles a year.

The chief result of the work of the Moscow Railroad lies in the fact that it indicates the possibilities and ways to handle the increasing volumes of shipments with the same traffic capacities, the same fleet of locomotives, and the same contingent of locomotive crews by intensifying the use of the technical facilities. The second principal conclusion drawn from the work of the capital railroad workers pertains to the need for a comprehensive approach to a task imposed by life itself--the task of increasing the traffic capacity of the limiting lines and sectors on the basis of superior engineering measures.

The 11th Five-Year Plan opens up on the road new vistas for stepping up the movement of trains of increased weight and length. The 1981-1982 schedule lays out nearly 800 special routes for such trains. A technology has been worked out for the formation of two-three through trains from the 100 empty open cars (400 axles) in the Smolensk-Vyaz'ma-Bekasovo-Cherusti sector, i.e. from the Belorussian to the Gor'kiy railroad. In the future the number of these will be stepped up to six-seven a day. Work to lengthen the tracks at the stations is proceeding at an intensive pace.

The experience acquired in the formation and operation of trains weighing 8-10,000 tons will enable us to double the number of these in the Rybnoye-Perovo sector and there has been a 25 percent increase in the number of trains with a length of 140-150 conventional cars on the Ryazansk line and in the eastern sector of the large district link.

The experience of the Moscow Railroad collective is everywhere receiving support and dissemination. On the railroads of the network, on the branch lines, and in the enterprises competition is in progress for a superior quality of formation, technical inspection, and operation of the heavy trains and for accelerated delivery of freight. Many collectives of railroad workers are actively engaged in this work.

At the recent enlarged session of the presidiums of the central board of the Scientific-Technical Society of Railroad Transport and the scientific-technical council of the MPS, a session given over to a discussion of the work submitted for the USSR State Prize competition, it was noted that great over-all network and national economic importance attaches to the large-scale operation of heavier and longer trains as organized on the Moscow Railroad. It enables us to increase the amounts of freight shipments without substantial capital investments and to successfully accomplish the main task assigned to transport by the 26th CPSU Congress--to provide for full and punctual satisfaction of the national economy and population needs for transport. The participants in the enlarged session recognized the fact that the work submitted is deserving of the State Prize and that the authors' collective had made the chief contribution to the development and introduction of the new technology. The engineering and scientific-technical community of railroad transport is unanimously supporting the nomination of this work and its authors for the USSR State Prize competition.

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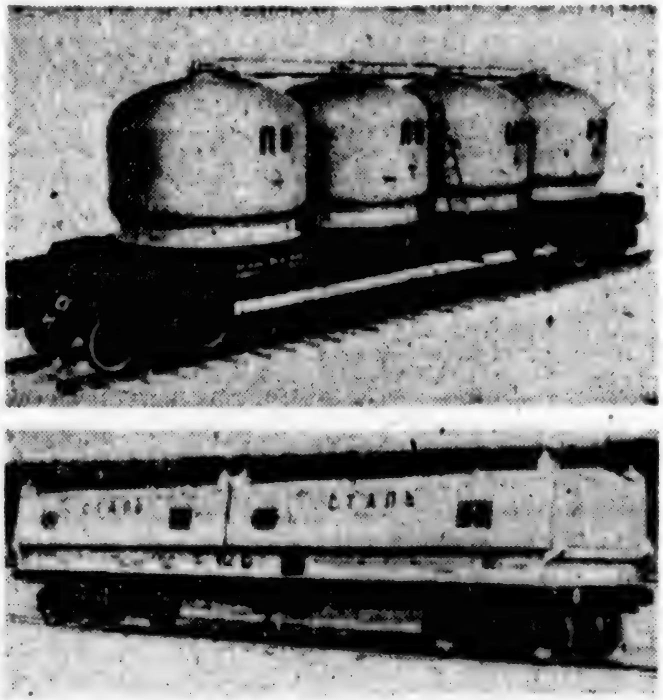
RAILROAD

DNEPRODZERZHINSK PLANT BUILDS SPECIALIZED RAILROAD CARS

Moscow GUDOK in Russian 5 Jan 82 p 4

[Article by B. Kolesnikov, Dneprodzerzhinsk-Moscow: "Compartments for the Magic Granules"]

[Excerpt] Picture a covered car where polyethylene bags are laid in piles from floor to ceiling. The loading brigade has spent several hours unloading thousands of these bags. And some of the bags have split and the granules have spilled out, being damaged and simply trampled underfoot. Even the most careful workers can do nothing--this freight is already exceedingly soft and its packing in a like condition. This is why the chemists have long nurtured a dream--how can we safeguard granules of polymeric materials in shipment and not lose a single one?



In the photographs: Models of the innovations of the Dneprodzerzhinsk Order of Labor Red Banner Railroad Car Building Plant imeni Gazety PRAVDA: Special cars for the transport of polymers in granules and thin sheet steel in rolls and piles.

Photo by B. Solov'yev

This car can still only be seen on the approach tracks of the Dneprodzerzhinsk railroad-car building plant imeni Gazety PRAVDA.. On the metallurgical platform they have set up four hermetically sealed containers in a manner suggesting inverted glass jars bottomside up.

"Notice," the enterprise director, M. Durachenko told me, "that the automatic penumatic unloading mechanism is concealed in special containers under the car. There too are the control panel, cranes and instruments. The polymeric shipment is unloaded in just 20 minutes and the job is handled by one person--the operator. And there are no losses and no breakage of the granules."

In the plant area I also had occasion to make the acquaintance of other innovators of special cars for the transport of various kinds of freight, cars developed by the designers as per the requisitions of the ministries and departments. Their chief merit lies in the fact of minimum costs for packing with absolute safety en route.

"In recent years," says the chief designer of the enterprise, G. Zhovtobryukh, "we have seen a trend toward the building of rolling stock for some types of products and materials where the special characteristics of the transport of them is taken into account. I would remind you that we developed the first domestic type of two-level car, which transports passenger motor vehicles, the eight-axle 105-ton open car for the delivery of nonferrous ore at the Noril'sk combine, cars for the shipment of hot sinter (agglomerate)--unique industrial semimanufactures--on the closed Krivoy Rog-Dnepropetrovsk-Donetsk railroad routes; cars for petroleum bitumen, and many other models. And if we are talking about today then I suggest that you examine the first-born for transportation without packing of thin sheet steel in rolls and piles.

"From a distance it is like a refrigerator, only of less height. Two white detachable sections set up on a platform with the large inscription 'Steel' on its border are provided as two containers, as it were. In the car they have installed permanent devices for the safe bracing of the metal which then goes into the conveyers of the motor vehicle plants to be made into the body of Volga, Zhigulya, Moskvich and Zaporozhtsev motor vehicles."

The cars, which are handy and very necessary for industry and which differ from the customary rolling stock in their shape and body design, go through a long series of tests before going out on the line and while they are still in the development stage. The chief training equipment is a special-purpose stand which was developed and introduced by the designers and railroad car-building engineers.

The car to be tested is removed from the operating trolleys and placed on a vibration mechanism which simulates movement under actual conditions. The future car body must pass an examination for strength and safety--it is subjected to the impact of speed and rail tread--amplitude of vertical and lateral vibrations, torsion forces (for example, in negotiating curved sectors of the track), braking acceleration of the train, etc.

If any component breaks in the course of the test it means that it is weak, unsuitable for the actual conditions of operation and should be replaced or subject to design changes. Sometimes checking a car necessitates subjecting it to such a load that it collapses. Then it has obviously reached the limit of its strength.

A subject of interest is the schedule for bench tests of the cars. These can be called "superspeed" tests--an experimental run of one hour on the stand is equivalent to the distance from Moscow to Vladivostok. And when it "runs" 5-6 days on the vibration mechanism it is equivalent to approximately 25-30 years of its operation.

The enterprise has a museum where one can trace the history of domestic freight car building. The yellowed photographs show a group of designers--in 1938 it developed the first special car--a dumpcar. It marked the beginning of a qualitatively new page in the biography of the enterprise, which was reactivated after the war. And alongside the old models are models of the cars of the future. Many of them are already undergoing operational tests on the network of railroads. As, for example, the 19.6 meter-long platform. Nothing like this had been built previously. What will it do for us? It will increase to a maximum the static load per axle, reduce the expenditure of metal, and generate a substantial economic effect. And the designers are continuing their search. On the sheets of Whatman paper there appear the outlines of the special rolling stock of tomorrow, something which constitutes a very essential development for the country's national economy.

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BRIEFS

CAVE TOURIST TRAIN—An unusual electric train was recently shipped from the experimental shop of the Riga Railroad Car Building Plant. It is called the "Turist" [Tourist]. Powerful ZIL trucks will deliver the train to Abkhaziya. The Riga Railroad Car Building Plant has an experimental shop which produces the very latest equipment. Many passengers have been able to appreciate the excellent features of the ER-200 superexpress which now operates on the Moscow-Leningrad line. This same shop is working on other interesting innovations. One of them is the ER-2R electric train. Its distinctive feature is that on descents and when braking it is able to conserve up to 20 percent of the electricity and return it to the catenary system. The shop also makes parts and assemblies for the noiseless streetcar. And now there is a new project, the Turist train. It is designed for a three-kilometer route in the Novyy Afon caves. People who have visited these caves will remember that the present underground transportation is not very comfortable. The Riga designers tried to correct this problem. When building the train the designers took the special conditions of operation underground into account. The cars are small in size and have radio communications. The Turist will carry 112 passengers. The cars are handsome in appearance, with a bright plastic exterior coating. The engineers also took care to make travel in it completely safe. The train has a pneumatic brake system and speedometers. [By O. Meshkov] [Text] [Moscow PRAVDA in Russian 3 Mar 82 p 6] 11176

BAM COMMUNITY DEVELOPMENT— Ulan-Ude—The commission for construction of the Baikal-Amur Mainline [BAM] of the Buryatskaya Oblast committee of the CPSU and the republic Council of Ministers have reviewed the questions of the design of permanent communities along the railroad line and the current situation with and steps to improve medical service to construction workers and availability of communications services and power supply. Participating in the discussion were executive party and Soviet workers of the republic, construction workers, and representatives from BAM and planning organizations in Leningrad, Novisibirsk, and Estonia. The condition and design of numerous communities was criticized, and the reason for delay in putting sociocultural facilities into use, especially in Severobaykal'sk, were uncovered. The commission demanded that construction workers, designers, clients, and also local governmental agencies be more exacting concerning the quality of community development, architectural appearance, and amenities and adhere strictly to scheduled introduction times. Kishinev—when you approach Alonka station on the part of BAM that is already in operation, you make a sharp turn and there through the window you see a little city of white stones laid out picturesquely on the slopes of a forested hill. This is how it was conceived by a creative group of architects from Moldgiprostroy [possibly Moldavian State Planning Institute for Construction]. A group of these architects recently visited Alonka. They saw two-story and three-story buildings with improved interior design, gas and electric ranges, and other household conveniences. They also saw the three-story school building in front of which stands a bronze bust of Sergey Lazo. It was a gift from the students of the Kishinev Polytechnic Institute imeni S. Lazo. A nursery school and daycare center have been built for the youngest citizens. Construction of the railroad terminal and a shopping center will be completed this year. The shopping center will have a store, cafe, everyday services combine, hotel, movie theater, and gymnasium. [Text] [Moscow GUDOK in Russian 18 Mar 82 p 2] 11176

RAIL SECTOR ELECTRIFIED—The 200-kilometer electrified sector of railroad from Kubandyk to Orenburg has been launched in operation. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 7, Feb 82 p 3] 11176

SUBWAY DUST REMOVAL—Leningrad—The working principle of the vacuum cleaner has been employed by Leningrad designers in a train designed to remove dust from the air of metro (subway) tunnels. Production workers of the metro service have begun assembling a test model of the cleaning unit. The auxiliary equipment and cleaning system are arranged in three series-produced railroad cars. The unit travels at 5-7 kilometers an hour. First the cleanup train lifts the dust up with powerful blasts of air, then suction devices draw it in through intake in the walls of the cars and collect it in tanks. The unit can clean up to 100,000 cubic meters of air an hour. Development of this "vacuum cleaner on wheels" is contemplated by the program for environmental protection on underground railroads. Scientists from Moscow, Leningrad, and other cities are participating in work under it. For example, a noise map of the metro was compiled with their help. It regulates the magnitude of sound impact on passenger platforms. The service areas at new stations are already faced with sound-absorbent materials. Rolling stock has also been equipped with original types of mufflers. The Microclimate Automated Control System is being set up to maintain necessary temperature and humidity in the metro. Sensors at the station and on the runs transmit operational information which computers use to "model" the optimal ecological regime for the underground station. [Text] [Moscow GUDOK in Russian 10 Mar 82 p 4] 11176

NEW DIESEL LOCOMOTIVES—New designs of diesel locomotives have been built at the Lyudinovo Diesel Locomotive Plant. Our main customers, the ministries of Railroads, Ferrous Metallurgy, and Coal Industry, have requested a substantial increase in the volume of production of these locomotives. This raised a difficult problem: to introduce and incorporate new capacities and carry out significant reconstruction work with practically the same personnel and without halting series production. Having begun preparations last year for reconstruction of the shops and launching a new wing in operation, for the first time in many years the plant did not fulfill its state plan, falling more than 50 diesel locomotives short. Nonetheless, for 1982 our plan was significantly raised. Converted to labor-intensity, the planned growth in volume of production this year compared to 1981 should be 29 percent. This is not a realistic assignment.

The plant has asked the Ministry of Heavy and Transport Machine Building and USSR Gosplan to set a demanding, but realistic plan. But we still have not received a solution to this problem. [By V. Boriskin, turner and Hero of Socialist Labor; A. Subochev, leader of a brigade of fitting and assembly workers and Hero of Socialist Labor; and, G. Petrukhin and Z. Sergeytsev, brigade leaders] [Text] [Moscow PRAVDA in Russian 23 Mar 82 p 2] 11176

CSO: 1829/173

NEED FOR COORDINATION OF TRANSPORTATION IN FAR EAST REVIEWED

Moscow MORSKOY FLOT in Russian No 2, Feb 82 pp 10-12

[Article by N. Khromovskikh, secretary of the Primorskiy Kray CPSU Committee: "Raise the Work of Transportation Centers to a New Level"]

[Text] Primor'ye is a region where meeting the vast and complex challenges set down by the Communist Party for accelerated development of the productive forces of the Far East depends greatly on normal availability of transportation to support interregional and intraregional economic and cultural ties. The principal types of transportation in Primor'ye are maritime, rail, and motor vehicle transportation, and their role is steadily growing.

More than 10 percent of the total capital investment appropriated for development of the kray's economy was directed to transportation construction. The material-technical base of the Far Eastern Transportation Administration has been bolstered and the maritime fleet of Primor'ye has received the latest types of ships. Up-to-date locomotives have been supplied to the railroad.

During this time valuable experience has been accumulated with raising the efficiency and quality of transportation work. This enabled the transportation workers of the kray in five years to convey more than 4 million tons of various types of output beyond the plan and to process about 700,000 tons of national economic cargo beyond the plan in maritime commercial and fishing ports.

The increased capacities of transportation, the more complex processes of delivering cargo, and the importance of the objectives being sought demanded constant attention to further improvement of the complex transportation mechanism based on coordinated work by all of the elements of transportation and refining management of the shipping process.

In connection with this, as far back as June of 1978 a joint resolution of the bureau of the kray CPSU committee and the kray executive committee established a kray commission to coordinate the work of different forms of transportation. It was commissioned to check on enterprise and organization fulfillment of the key decisions of the CPSU Central Committee and USSR Council of Ministers on questions of transportation work. The commission has done a great deal of work to carry out plans for the development of transportation. It coordinates the work of different forms of transportation to achieve fuller and more timely satisfaction of the needs of the economy and population of the kray for conveyance of cargo and passengers with minimum costs, and it organizes checks on performance of measures to eliminate irrational conveyance. The commission also adopts steps toward the creation of a precise system of cooperation among rail, maritime, and motor vehicle transportation and introduction of automated control systems at transportation enterprises.

But these measures by themselves are not enough to organize precise and coordinated work by transportation enterprises. It became essential to coordinate the work of all transportation elements on the basis of mutually reconciled planning.

In April 1978 the enterprises of the Vladivostok transportation center began working on a coordinated continuous schedule-plan. In connection with formation of the transportation center the collectives of all the enterprises included in it made an agreement for comprehensive socialist competition. They introduced unified controller shifts, took steps to improve organization of the transshipment process, and set up a computer center in the port. Preparations are being made to use the computer center to manage the continuous schedule-plan of port work.

In July 1978 a transportation center was established in Nakhodka. Then the Primor'ye Steamship Company, the Vladivostok section of the railroad, Primneftesnab [possibly Primorskiy Kray Administration of Petroleum Supply], and the Vladivostok transportation center of the fishing industry began working using the Leningrad method.

Transportation centers [uzly] are a good form of comprehensive cooperation for associated transportation enterprises. This form makes it possible to achieve a greater effect thanks to improving the use of rolling stock. Thus, for the first time in the last 10 years the norm of railroad car turnaround was fulfilled by the Vladivostok section of the railroad. Up to 300 cars a month are freed by transferring short-haul shipping in large containers from rail to motor vehicle transportation. The volume of cargo handling by the direct variation has risen, and the time that cargo is located in port warehouses has been cut by 24 hours. Railroad car downtime on sidings at industrial enterprises adjacent to railroad stations which are part of the transportation centers has been cut 15 percent.

Introduction of the progressive practices of the Leningrad transportation center workers enabled port, rail, and motor vehicle workers of the kray to successfully carry out their production-financial plans and socialist obligations in the first six months of 1981, to fulfill assignments for shipping cargo to regions of the Far North and Viet Nam, and to increase transshipment of important cargo for construction projects in the country through our ports by 10 percent.

At the same time, organizing coordinated work in the transportation centers requires further refinements. Experience shows that the creation of a precise system of management and coordination of work in transportation is one of the chief reserves for raising the efficiency of work by transportation enterprises.

The lack of communication resulting from departmental differences creates great difficulties for further development of mutually coordinated work by allied forms of transportation enterprises.

For example, while questions of planning shipping and the development of transportation over the medium run are decided by central planning bodies, planning during the year and implementation of transportation operations, including through container and stack shipping, are practically not coordinated by any one.

Departmental lack of communication makes it more difficult to coordinate transportation management, plan its work and development on a comprehensive basis, carry out unified technical-economic policy with respect to building modern means of transportation and mechanization and automation of transportation processes, and to conduct comprehensive scientific research in the transportation field.

The means and methods of management in the kray in the current phase lag significantly behind the level of development of the material-technical base and the scale of primary transportation activity.

As a result, the rate at which cargo is transported decreases, irrational countershipments occur, rolling stock is used inefficiently, cargo is held up for long times at transshipment points, and significant national economic losses are permitted. Thus, each year the Far Eastern Railroad alone loses 10-15 million car-hours, keeps an additional 1,000-1,500 cars in its working fleet in the second and third quarters of the year, and overstates their circulation during this time by 5-6 hours.

There are still many unsolved problems in transportation. We must step up work to solve such problems as construction of exhibition parks in the ports, construction of rail siding and more remote warehouses, implementation of other additional measures to raise the reliability, stability, and efficiency of work of means of transportation. For example, it is becoming a pressing need today to establish a permanent interregional commission on coordination of all types of transportation in the Far Eastern region with the rights of an advisory body, because the lack of a clearcut system of interoblast cooperation among rail, maritime, and motor vehicle transportation here is leading to significant losses of shipping capacity.

A regional meeting on transportation problems of the Far East was held in 1978 with participation by important representatives of party, Soviet, and economic bodies of Primorskiy and Khabarovskiy krays and Sakhalinskaya, Kamchatskaya, and Magadanskaya oblasts. The meeting produced positive results but, unfortunately, the practice of holding such meetings did not take root.

The coordination of actions of ministries in the planning field needs major improvements, particularly as to supporting shipping plans on the basis of organizing coordinated activities by allied transportation subdivisions.

The transportation centers experienced great difficulties in 1980 because of systematic failure to fulfill the plan for delivery of railroad cars to carry important cargoes and because of frequent convention prohibitions instituted by the Ministry of Railroads and rigid car-transfer assignments. As a result, the ports of Primor'ye failed to ship at planned times 590,000 tons of general import cargoes and up to 100,000 tons of such cargo was continuously located in the warehouses. This made it much more difficult to unload railroad cars carrying Arctic loads and other types of cargo.

In 1981 the ports expected to ship more than 80,000 tons of imported equipment, pipe, and other cargo. At the same time the Far Eastern Steamship Company was supposed to increase shipping of Arctic cargo by 50,000-60,000 tons.

A major continuing problem for our transportation centers is the arrival of a large number of means of transportation carrying "refusable" loads. Each year up to 2,500 railroad cars and 5,000 containers arrive needing significant expenditures of labor and material resources to eliminate violations and deviations from standards and norms existing in rail and maritime transportation to insure preservation of the cargo being shipped.

We do not have rules agreed upon by the ministries for shipping imported liquor and citrus fruits. This leads to constant refusals to ship them by rail. The railroad workers say that the containers do not insure preservation of the freight, and this leads to important goods waiting long times in port.

Some freight shipping ministries do not fully carry out the decrees and instructions of the USSR Council of Ministers related to improving the planning and organization of shipment of export cargo and delivery of cargo in containers and stacks.

In order to achieve an even workload at the ports of the Far Eastern Steamship Line, up to 60 percent of the annual volume of cargo shipment to regions in Magadanskaya Oblast and Kamchatka was to be shipped in the first and fourth quarters of 1981. This would have made it possible to perform Arctic shipping more successfully in the second and third quarters and prevent a significant accumulation of railroad cars carrying transshipment cargo.

But the freight shipping ministries did not fulfill this demand. As a result, during the winter period our transportation centers have a shortage of cargo, but at the peak of Arctic shipping the ports are overloaded and "traffic jams" of many thousands of railroad cars occur at the stations. They stand for weeks waiting to be unloaded.

As long ago as 1979 USSR Gossnab and the freight shipping ministries and departments were ordered to switch entirely to shipping a number of important types of cargo for regions of the Far North in stacks and containers. But adequate steps have not yet been taken to introduce this progressive measure, and shipment of large amounts of cement and mixed feed has been permitted through the ports of Primor'ye in unstacked form.

As a result, while overall growth in volume of shipping of national economic cargo rose 11 percent in 1979, stack shipping declined by 22 percent. The receipt of a significant amount of unstacked cargo caused a 10 percent increase in the labor-intensiveness of cargo handling in the ports, which led to significant downtime for railroad cars and ships waiting for cargo-handling operations.

A similar situation developed in 1981 when a number of shippers were again authorized to ship hundreds of thousands of tons of unstacked cargo to regions of the Far North.

To solve these problems it is essential to activate the work of the interministry commission on coordination of transportation work.

Furthermore, a permanent regional conference should be established in the Far East, because without interoblast cooperation today it is impossible to achieve efficient transportation work, above all for rail and maritime transportation.

Several scientific research institutions have been joined in work to improve transportation links in the Far East today: the Far Eastern Science Center of the USSR Academy of Sciences, Dal'morniiproyekt [possibly Far Eastern Scientific Research and Planning Institute for Maritime Transportation], the Khabarovsk Institute of Railroad Transportation Engineers, plus the Far Eastern Steamship Company and the Far Eastern Railroad. A public laboratory for interdepartmental coordination of transportation and technical work has been organized at the scientific-technical council of the Primorskiy Kray committee of the CPSU.

At the same time the inadequate preparedness of rail sections and enterprises of the fishing industry for close cooperation with maritime and motor vehicle transportation to solve the problems of joint planning and management at transportation centers and exchange precise information for compiling continuous schedule-plans seriously retards work to coordinate interaction among forms of transportation.

The lack of coordination among automated control systems that have been developed at transportation enterprises leads to a situation where their computer centers are equipped with different types of machinery, and this makes it impossible at present to achieve uniformity of the system, and in the future will slow down implementation of comprehensive planning and management of different forms of transportation.

The problems facing transportation workers of Primorskiy Kray today are very urgent. Unless they are solved further growth in the kray economy will be simply impossible, and we must hope that the interested ministries, above all the Ministry of Railroads, the Ministry of the Maritime Fleet, and the Ministry of Foreign Trade, will give us real help in solving them.

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OCEAN AND RIVER

ODESSA SHIP REPAIR YARD IMPROVES WORK QUALITY

Moscow MORSKOY FLOT in Russian No 2, Feb 82 pp 14-15

[Article by V. Segodin, chief of the technical control division of the Odessa Ship Repair Yard: "The Goal Is to Raise Quality"]

[Text] The transition of the economy to the path of intensification involves, as observed at the 26th Congress of the CPSU, fuller and more efficient use of production potential in order to achieve the maximum result while using fewer resources in production.

Raising the quality of output and of labor and reducing losses from defective work are an important reserve for conserving material and labor resources.

The Odessa ship repair yard is an enterprise which has its own specific characteristics and differs from machine building plants by its greater variety of jobs done, their complexity, and the high requirements for the quality and reliability of the design elements of the mechanisms, devices, and systems of the ships in repair.

The yard performs all types of repair on various classes of maritime vessels. In addition, it produces many types of subproducts: cast anchor chains of different sizes and connecting elements for them, screw propellers, chrome-plated screw shafts, cylinder heads, piston heads, power and oil piston rings, parts for the fuel equipment of ship diesels, anchor and warping capstans, and so on.

All this makes it necessary to enlist highly qualified workers and engineering-technical personnel and constantly refine the technology and organization of production. Therefore, a great deal of attention is devoted to questions of raising the quality of output and labor and there is a constant creative search for new ways to perform these jobs and for unused reserves.

The yard has worked on the Saratov system of defect-free manufacture of output and turning it over to the technical control division the first time since 1964. Institution of the system made workers more accountable for the quality of the jobs they do, instilled a conscious, creative attitude toward labor, and created the prerequisites for a transition to self-monitoring. The right to use a personal identification stamp was given to workers who had thoroughly mastered their specializations and for a period of at least six months had turned over output without criticisms, in full conformity with the requirements of normative-technical documents, and entirely acceptable on the first submission.

In 1973 the Komsomol-youth brigade of dock workers headed by P. Kuzinovskiy called on all brigades at the plant to give written guarantees of jobs done. A special statute was worked out on issuing the guarantee obligation, which was applied chiefly to the final stages of work (assembly, installation, finishing, and so on). In these stages the brigade guaranteed the high quality of work done and was obligated to take care of all problems detected that were its fault immediately and without charge.

In the years since this initiative has developed and expanded. A growing number of leading brigades joined the movement and the list of jobs being done with a worker guarantee widened. In 1979 the first guarantee obligations began to be given for the entire set of jobs done by the brigade or several brigades on a ship. This initiative arose from the pipe shop. Today the different brigades at the yard issue an average of 2,000 guarantee obligations a year. They have not received claims from customers against work done with the worker guarantee.

All this promoted an improvement in the quality of output produced by the workers, the ones directly involved. But the quality of output also depends greatly on the quality of labor of engineering-technical personnel and employees who work on questions of improving and preparing for production and the organization of production.

The L'vov system of defect-free labor began to be introduced at the yard in 1975, starting with ship repair.

Statutes were worked out (later modified to be enterprise standards) in 1975 to evaluate the work of subdivisions on the defect-free system of labor. These statutes contained lists of jobs facing them, according to their functional duties and graduated scales of decreases in the coefficient of labor quality for failure to fulfill these tasks and various omissions in production activity. In 1976 all subdivisions at the yard switched to work on this system.

The defect-free labor system came to stimulate the quality of labor not only for engineering-technical personnel, but also to some extent for workers, because the special evaluation indicator, the coefficient of labor quality, was included in the conditions of socialist competition among shops, divisions, and services of the yard as one of the basic indicators. The economic impact of introducing this system is 24,000 rubles a year.

In 1979 an output quality control system was instituted that makes it possible to evaluate ship repair work done by brigades or individual workers on a five-point system. A coefficient of quality is determined from the sum of evaluations received by the brigade or worker and the bonus to workers depends on its size.

Information for the output quality control system is processed by computer and permits forming judgements about the state of affairs in a particular shop, section, or brigade or for the plant as a whole for any time interval, judgements on the quality of repair or manufacture of particular assemblies, mechanisms, and devices of systems of the ship as a whole, and judgements about the degree of workload on the monitoring apparatus of the technical control division.

Workers of the comprehensive dock shop came forward with an initiative to set up a consolidated comprehensive brigade, which was headed then by brigade leader V. Vasil'yev. The brigade began to carry out the entire set of jobs to repair ships in dry dock. This initiative was later taken up by brigade leaders V. Isayev, V. Agat'yev, S. Bulas, and others.

In 1980 the yard completed introduction of the comprehensive system for output quality control. This complex includes the following elements: the defect-free labor system to stimulate the labor of engineering-technical personnel and employees of the yard; output quality control to stimulate the quality of worker labor; a yard standardization system consisting of 33 enterprise standards for the comprehensive output quality control system and 66 yard standards that regulate questions of technology and organization of production. The economic impact from introduction of the comprehensive system is 34,000 rubles a year.

The plan for the yard stipulated that the yard certification of quality would be given to five types of output produced in the year.

The collective of the electrical installation shop won the socialist competition for the title "Shop of Outstanding Quality." More than 70 percent of the production groups in this shop are groups of outstanding quality. Projects are always turned over to the technical control division on the first submission, and there are no complaints about the work done by the shop.

Since 1973 different brigades at the yard have issued a total of 11,284 guarantee obligations. The yard has 34 comprehensive brigades, five production groups, and one shop which are collectives of outstanding quality, as well as 100 workers who have received the title "workers of outstanding quality." In addition 72 brigade leaders and 97 workers have their own personnel stamps.

Fulfillment of plans of measures to raise output quality by the collectives of shops and divisions at the yard and introduction of the comprehensive output quality control system insures an annual improvement in the quality of the work. Thus, whereas the quality coefficient for the yard as a whole in 1975 was 0.71, in 1980 it was 0.837. The number of cases of defective work declined from 697 in 1975 to 313 in 1980.

The plan of measures for the 11th Five-Year Plan contemplates further refinement of the comprehensive output quality control system and an improvement in its efficiency. These measures should insure that the yard performs all types of ship repair and other work in a high-quality manner with long-term guarantees.

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OCEAN AND RIVER

LIGHTER CARRIER SYSTEM TO RECEIVE NEW FEEDER SHIPS

Moscow MORSKOY FLOT in Russian No 2, Feb 82 p 44

[Article: "Feeder Ships"]

[Text] The countries participating in the Interlighter Navigation Enterprise are now using a lighter carrier system to transport foreign trade cargo on river-sea routes. The system includes two ocean-going lighter carriers, the Yulius Fuchik and the Tibor Samueli, with deadweights of 38,000 tons apiece, built for the Soviet Union at the Valmet Company shipyard in Finland and designed for rapid transportation of lighters assembled at a definite point from different rivers, shallow coastal regions, and the like. The system includes tug-pushboats for more economic delivery of lighters to the ship.

In 1983 the same shipyard will build two feeder ships with deadweights of 8,700 tons apiece. They will be part of this system and will serve ocean-going lighter carriers at the end of their maritime routes or work independently on short trips. The maximum length of these ships is 158.9 meters, with a width of 31.0 meters. The ships are 5.3 meters high to the main deck and 15.4 meters to the top deck. They have a draft of 9.3 meters under load.

The power plant on this new ship will be two medium-rpm diesels with a total power output of 5,600 kilowatts, permitting the ship to develop a speed of 13 knots. There are 30 cabins for the crew.

The ship can take on board six Dunay-sea type lighters with deadweights of 1,070 tons apiece. To transport them to very shallow regions 440-kilowatt tug-pushboats can also be used. The ship can hold 12 LESh type lighters instead of the Dunay-sea lighters.

The ship has a stern ramp for loading other types of cargo (containers, wheeled and caterpillar equipment and the like). Thus, it is possible to load 513 international standard containers in three levels.

The good sea-keeping qualities of the new ships will make it possible to use them in regions that freeze also.

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INTRODUCTION OF QUALITY CONTROL SYSTEMS GOING SLOWLY AT SHIPYARDS

Moscow MORSKOY FLOT in Russian No 2, Feb 82 pp 45-47

[Article by I. Paskhal'skiy, chief of the technical control division of the Nakhodka Ship Repair Yard: "The Quality of Output of Ship Repair Yards"]

[Text] Concern for the quality of repair is a characteristic of the work of the collective of the Nakhodka ship repair yard. Yard workers understand very well how much depends on the quality of their labor. They are constantly looking for new ways to raise quality. They study and introduce the practices of leading enterprises in the country. The yard has introduced certification of quality and a system of defect-free labor.

Yard certification makes it impossible to improve the quality of output on a planned basis, and this is perhaps the most important thing. Whereas formerly raising the quality of output at the yard was not planned, now the shops receive plan assignments each month for producing output with the plant Mark of Quality. The assignments are mandatory and fulfillment of them is taken into account in summarizing the results of competition and giving material incentive. This is made even more valuable by the fact that no effective system of planning quality indicators relying on calculated norms and related to the material incentive system had been devised for ship repair yards before.

The yard's system of defect-free labor now covers all production workers, engineering-technical personnel, and employees. Auxiliary workers are to join it this year too. Introduction of this system made it possible to establish a relationship between the quality of each yard worker's labor and the compensation for this labor.

Among the other measures introduced are giving the best workers the right to work without monitoring by the technical control division and using a personal stamp of output quality (about 360 people now have this right), conducting weekly quality meetings, and ongoing public inspection of output quality, and others. All these things have made it possible to achieve a noticeable improvement in the quality of ship repair, raise the sophistication of production, strengthen industrial discipline, and reduce the number of complaints and claims. Despite the successes, however, ship repair yard workers today are still far from saying that they have solved the quality problem.

The work experience of leading enterprises in the country shows that to solve the problem of raising output quality it is necessary to set up a quality control system organized according to all the rules of management science, based on the solid foundation of the State System of Standardization, and relying on the organizational structure of production management.

The Nakhodka ship repair yard began working on questions of development and introduction of the comprehensive output quality control system as far back as 1976. An analysis of the state of affairs with respect to output quality was made, technical specifications for the system were written up, enterprise standards on quality control were developed, and individual elements of the system were introduced.

In 1981, according to an assignment of the Ministry of the Maritime Fleet, all yards were supposed to complete development and introduction of the comprehensive output quality control system, but system developers today are dealing with problems that cast doubt on the feasibility of this assignment. These difficulties in one degree or another face all the ship repair yards of the ministry, and they have been discussed many times at ministry-wide meetings on development of the comprehensive systems. The difficulties have specific characteristics at different yards, but their source is obviously the same: the fact that the enterprise does not have sufficient incentive to develop and introduce a comprehensive output quality control system as the result of objective factors, foremost of which is the lack of a mechanism for planning quality indicators that is related to stimulation of enterprises based on final results of their activity. The benefits received by an enterprise from fulfilling quantity indicators are incomparably large compared to the small problems that occur from producing poor-quality output, and enterprises are given no incentive whatsoever to improve the quality of output. Therefore, the enterprise does not face an internal need to set up a control mechanism to systematically raise output quality.

It is this lack of incentive that creates the grounds from which the formalistic approach to the comprehensive output quality control system arises, when a set of various unrelated measures is put forward as a system and work is done chiefly because of the need to report to the higher-ranking organization.

But what are the difficulties that follow from the formalistic approach to development of comprehensive output quality control systems?

Despite the recommendations of the State Committee for Standards, which say that the director of development of the comprehensive system (the actual director, not the nominal director) should be the chief engineer of the enterprise, this position is often transferred to the shoulders of lower-ranking employees at the yards; chiefs of technical control divisions, standardization bureaus, and the like. This results in a situation where the system developer does not have adequate rights to make responsible decisions and enterprise managers are often divorced from management of system development. As a result, decision-making drags out for a long time.

The greatest difficulty is deciding the question of the organizational structure of quality control, in particular organizing a specialized subdivision to control output quality.

In its guidelines on the comprehensive output quality control system Chernomorniiproyekt [possibly Black Sea Scientific Research and Planning Institute of Maritime Transportation] envisions formation of a bureau (group) on organization of work for output quality control. The group would be directly subordinate to the chief engineer, but here the guidelines make a stipulation which makes it possible to include this bureau within another structural subdivision with subordination through the manager of the subdivision. Moreover, no recommendations at all are given on the structure and numerical size of this bureau. What this kind of indefiniteness can lead to is shown by the example of the Krasnaya Kuznitsa yard where full management of the comprehensive output quality control system is assigned to one production engineer who is a member of the staff of the standardization group. Chernomorniiproyekt is the author of the Model Structures of Control and Norms for number of engineering-technical personnel and employees at ship repair yards. Even though this document was developed in 1977, which is after the decision to introduce the comprehensive system at enterprises of the Ministry of the Maritime Fleet was adopted, it does not even mention the system, nor does it envision any subdivision for quality control. The very concept of "output quality control" plays no part at all in this document. Such jobs as planning output quality, yard and state certification of quality, supporting the functioning of a defect-free system of labor, and the like are omitted in the consolidated lists of primary jobs of engineering-technical personnel and employees.

In addition to the above-mentioned difficulties which arise from the formalistic approach to introduction of the comprehensive system, there are also factors that have a negative effect on development and introduction and raise doubt about the successful functioning of the system.

The standardization and metrology services, of course, play a large part in questions of supporting output quality. The State Committee for Standards recommends that special attention be given to strengthening and developing these services during development and introduction of comprehensive output quality control systems. But how are things going at the yards?

The number of employees of the standardization service as established in the Norms is plainly inadequate for successful performance of the jobs that now face it. Under conditions of an operating comprehensive output quality control system, which of course is based on enterprise standards, the volume of work assigned to the standardization services will rise significantly, and these services will not be able to insure normal functioning of the system.

As for the metrology services, all we can say is that the yards do not have such services. They are not contemplated by management diagrams or by the Norms.

The normative documents on the comprehensive output quality control system envision that introduction of the system demands the organization of technological preparation of production based on standards: the Unified System of Technological Documentation (YeSTD) and the Unified System of Technological Preparation of Production (YeSTPP).

The sectorial standards of the YeSTD were developed and instituted in November 1976, but they are being introduced poorly. These standards still have not been introduced, for example, at the Nakhodka ship repair yard.

As for the standards of the YeSTPP, the situation is even worse. There are still no sectorial standards under this system, no methodological instructions on introducing the system, and no work underway in this area at the yard.

The fact that higher-ranking organizations are not sufficiently demanding allows certain enterprise managers to consider the development and introduction of comprehensive output quality control systems a secondary matter.

Ship repair yards of our ministry, in particular the Novorossiysk yard, have begun introducing a comprehensive control system for raising production efficiency. This worthwhile initiative deserves approval, but at the same time we should not forget that this new comprehensive system is not being built from scratch. Rather it is developing on the basis of the simpler comprehensive output quality control system.

The great importance which now attaches to introduction of the comprehensive output quality control system demands that all the workers of our enterprises and institutions who are involved with the development of the system give constant attention and concern to this important work, taking a creative, not formalistic approach.

Only on this condition is it possible to develop a comprehensive output quality control system promptly and well and receive tangible results from its introduction in terms of improving output quality and raising production efficiency.

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OCEAN AND RIVER

NEED FOR BETTER SHIP REPAIR EQUIPMENT, ORGANIZATION CITED

Moscow MORSKOY FLOT in Russian No 2, Feb 82 pp 50-51

[Article by G. Medvedev, deputy chief engineer in charge of technical preparation for production at the Novorossiysk ship repair yard: "The Main Thing Is to Reduce Manual Labor"]

[Text] The Novorossiysk ship repair yard, the base repair enterprise of the Novorossiysk Steamship Company is running head-on into the problems presented in L. Kryshtyn's article "Reliability and Repairability of Ships" (MORSKOY FLOT, No 6, 1981). The technological capabilities of ship repair today are adequate to insure normal technical operation of a modern fleet. But at the same time they are not unlimited and cannot rival the industrial might of the many (about 600) agent-enterprises of the shipbuilding industry which participate , for example, in building Krym class tankers.

Just as it is unrealistic to provide ship repair enterprises with all types of equipment to restore all a ship's technical units without exception, neither can we expect that the problem of repairability can be solved within the framework of a single enterprise. It is sufficiently complex and, if not nationwide, is at least a sectorial matter.

It is precisely because the possibilities of any repair are finite that the present State All Union Standard includes the property of an object of being adapted to elimination of the consequences of malfunction and damage in the concept of "Repairability." But how do things stand in reality, from the standpoint of the capabilities of a contemporary ship repair yard such as the Novorossiysk yard?

A practical demonstration of the low repairability of contemporary large-tonnage ships is the fact that the traditional approach to reduce repair time by accelerating the pace of work by increasing the number of workers or shift coefficient is no longer productive enough; sometimes it is useless. The specific technical circumstances that arise during performance of work demand a higher level of production, approaching the level of flow production in machine building, power industry, instrument making, and the like.

Therefore, ship delays are related chiefly to lack of the necessary equipment to fabricate particular articles. To confirm this we may refer to the case of repairing the anchor-mooring complex of the bulk tanker Marshall Rokossovskiy (deadweight of 101,800 tons). The many-ton unit, consisting of a hydraulic mooring winch and an anchor windlass attachment, is designed so that the parts which require preventive maintenance during operation can be inspected only after partial or complete dismantling using a large-capacity floating crane. It should be considered here that the mechanisms are located in the bow of the ship and subject to intensified corrosion owing to the constant effect of the sea water. After the anchor-mooring complex of the bulk tanker Marshall Rokossovskiy was removed from its beds and completely dismantled under shop conditions, it was found necessary to fabricate and replace certain parts, including large ones (main load shaft, couplings, and bearings) which do not go out of order during the entire service life of the ship under normal conditions.

The need to use high-alloy materials to fabricate these parts, and the fact that the yard does not have the appropriate heavy duty forging and metal-cutting equipment to cut teeth in large parts demanded that the yard search for new, unconventional technical concepts. Thus, the splined joint of the load shaft was modernized into a pin coupling; complex industrial fittings were fabricated; random parts were used as materials for the parts, all the way to the screw shaft of a Sophiya class tanker which had been rejected earlier as defective (inevitably involving turning more than half of the original weight of the parts into shavings).

The repair job was completed. Everything was tested and the complex will work reliably for some time. But does this exhaust the problem? Obviously, it does not.

It should be noted that the case of the repair job on the anchor-mooring complex of the Marshal Rokossovoskiy is not an isolated one. A similar case was the diesel ship Marshall Budennyy. The yard restored an anchor windlass attachment, completely similar in design, from the Krym class tanker Kuzbass.

If these examples are evidence of particular problems arising from poor repairability which, despite their unconventional character, can be solved by the personnel of the ship repair yard, still we cannot fail to note that the practice of operating and technical maintenance on large tankers also raises more complex problems which require the involvement of the sector's major scientific-technical forces.

To characterize the repairability of the KVG-80 main steam water-tube boiler of a Krym class tanker, it is sufficient to point out the low frequency of tubes on one aggregate. Moreover, within the same series, consisting of six ships, each boiler differs from the others. Such boilers, or to speak more accurately such pipes (their most vulnerable part) can only be fabricated individually, on the spot, during repair, and the low level of industrialization of repair work is, therefore, a result of the boiler design itself.

The dimensions of the KVG-80 shaft boilers, being used for the first time in the domestic fleet, are considerable (17.2 × 7.3 × 11.2 meters). Each boiler has about 600 tubes, but contemporary ship repair yards have no highly automated or adequately mechanized means for putting small-radius bends in very large tubes. So jobs involving the fabrication and replacement of tubes become a factor that determines the overall length of repair on such ships.

In July 1981 four Krym class tankers were standing in the outer roadstead of the port of Novorossiysk, all needing repair on the KBG-80 main steam boilers. One would expect that this situation would call for the highest possible engineering level to solve the problem of accelerated boiler repair. Two attempts were made to enlist the help of the Ministry of the Maritime Fleet's head organization on repair of ship equipment, the Black Sea Central Planning and Design Bureau which does have a subdivision on boiler repair. But the bureau refused to participate in work which was essentially aimed at raising the repairability of the boiler of Krym class ships. The response of the boiler's designer to the yard's requests was also formalistic at best.

It is typical in this situation that the responsible party (the ship repair yard) remains alone with the extremely low repairability of the object. It seems obvious that work on technical supervision of repair of KVG-80 boilers should be turned over to a specialized engineering subdivision of the sector, to the Black Sea Central Planning and Design Bureau. In this case the question of repairing KVG-80 boilers could take on the industrial scope that is so essential here and repair experience could be translated into the language of generalized, standard ship repair documents, for example technical specifications for repair of boilers with high steam parameters. In any case this would have a beneficial effect on the time and quality of repair.

The repairability of steam fittings is another problem question that demands review of the technical concepts adopted in building large ships. In most cases the steam fittings are done without flanges and therefore are welded to the steam line electrically. For repair they are cut off by abrasive disks, a very unproductive and labor-intensive method. The malfunctioning of the shutoff part of the fittings after 10,000-15,000 hours of operation, the substantial labor input to repair such a steam line design in general, the poor conditions for welders during their work, and finally, the low reliability of the method itself of building up the working fields of the fitting with solid alloy are sufficient evidence of the need to search for more sophisticated technical concepts. A new material with high design and technological properties must be proposed.

Other examples of poor repairability could be given where solving the problem should begin at a higher level than the ship repair yard.

The heads of the low-pressure turbines of the main power plants of Krym class ships are welded by electrical welding around the entire perimeter of the turbine joints, to achieve an airtight seal, of course. The tubes and slide valves of the load system with a diameter of 800 millimeters are located in the corridor of the double bottom and cannot be repaired or replaced without cutting through large areas of the primary hull elements of the ship with a blow torch.

The large-tonnage fleet causes the greatest expenses as the result of poor repairability. And if positive changes were made here, they would show most graphically the necessity and wisdom of improving this work everywhere, and the very concept of "repairability," which to most ship repair workers today is just an academic term, would begin to become a real thing.

Substantial changes have occurred in shipbuilding today in the direction of more complex equipment and technology. These trends have been embodied in the new, modern transportation fleet and have caused a decline in repairability.

To maintain a high technical level for the fleet, ship repair today, under conditions of individual production, should be able to produce much more complex products than before.

The low repairability of certain assemblies of large ships, which has become a fact, poses the need to work out definite, fundamental organizational-technical concepts to insure preparation of an appropriate ship repair base.

The changes in ship building make it necessary to adopt appropriate measures in the technology and organization of ship repair work. Ship repair by itself, one-on-one with the powerful fleet, cannot solve the problem without the involvement of all the scientific-technical potential of the Ministry of the Maritime Fleet.

Ways to solve the problem of repairability are seen in several main areas: modernization of ships and ship technical devices to increase their repairability; saturating ship repair facilities with progressive technological equipment; using new technologies that insure repair reliability and reduce labor-intensiveness; and, precisely organizing cooperation with industry.

In any case, all paths should lead to fulfillment of the main task: reducing manual labor in ship repair and fleet repair time as much as possible. To do this it is obvious we must work out a special comprehensive program to improve the repairability of ships and prepare repair facilities. The program approach will make it possible to insure rapid and coordinated conduct of the entire cycle of work, from technical development to realization of results in practice. This work should be headed by sectorial science and the head planning-design organizations of the Ministry of the Maritime Fleet, which should use an experimental ship repair yard in one of the steamship companies to work out and disseminate appropriate technical measures so that they can then become the property of all ship repair workers.

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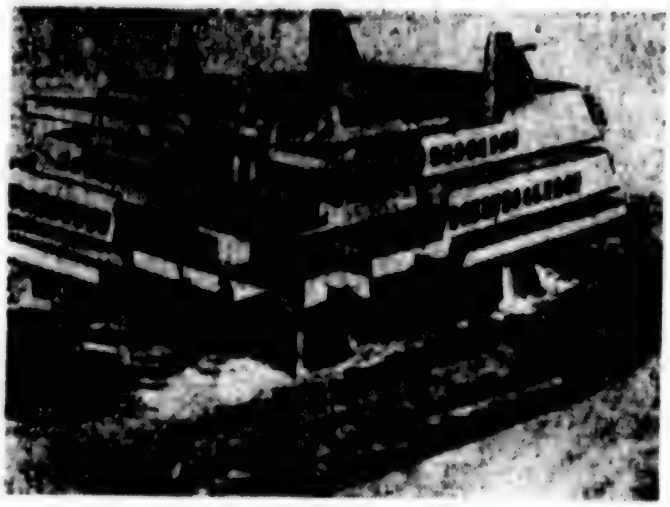
OCEAN AND RIVER

COMBINED SUBMARINE-SURFACE SHIP PROJECTED

Moscow VODNYY TRANSPORT in Russian 20 Feb 82 p 4

[Article: "20th Century Projects That Still Await Realization"]



[Excerpt] Scientists and designers are looking into the future of shipbuilding. VODNYY TRANSPORT has already written about nuclear-powered lighter carriers, sailboats, and water-air hybrids. But bold thinking is breaking the traditional principles of navigation. For example, as one of the cargo ships of the future Soviet designers are proposing an underwater-surface catamaran. They believe that the carrying hulls concealed at depth reduce wave resistance, the power output of the engine, and fuel consumption. The simplicity and functional shape of the surface superstructure, which does not touch the water, provides a more convenient location for cabins, vehicle parking, and rest areas. The underwater hulls can be loaded with vehicles and containers by means of special hoists. The crew members and passengers will be able to relax in quarters that are far from the engines and, therefore, from their vibration and noise. But they will also be able to admire underwater landscapes in a special compartment.

Nuclear-powered engines can easily be used in such ships. Located in the underwater hulls, they can be reliably insulated from both passengers and loads.

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FAR EASTERN PORT INSTALLS CARGO-PUMPING SYSTEM

Moscow VODNYY TRANSPORT in Russian 11 Feb 82 p 1

[Article by L. Stukun, Nakhodka: "Special Assignment"]

> [Text] Lev Stepanovich Stukun, VODNYY TRANSPORT's own correspondent for the Far Eastern Basin, has arrived to work in Vladivostok. We publish today his first report.
>
> "Dispatch 300-330 railroad cars carrying loose bulk material from the ports of Primor'ye each day" — this is the challenge which the seamen and port workers of the Far Eastern Steamship Company have set for themselves in response to the resolutions of the November 1981 Plenum of the CPSU Central Committee.

The weather in Primor'ye is capricious. The sun was shining yesterday, but today the wind blew in low, heavy storm clouds from the sea, a wet snow fell, and on the docks, where just the night before powerful cranes were humming and grapples dipped in to the holds of the ships, continuously drawing out cargo and carefully pouring it into railroad cars, work came to a halt. It is quiet on this dock in Nakhodka now, and through the snowy shroud all one can make out is the abandoned black silhouettes of the portal cranes on the ships with an occasional glimpse of the solitary figure of a seaman on watch.

That is why the optimism of G. Pikus, chief of the Nakhodka commercial seaport, might seem completely out of place. He said resolutely, almost solemnly: "Beginning 10 February we are going to process loose loads in any weather. That is the day when the two new all-weather complexes will begin operations. They were designed by our designers and built with the help of the Nakhodka shipyard."

As I have already said, I might have taken a somewhat skeptical attitude toward the port chief's promise if I had not already learned that an enormous amount of work had been done with the participation of the best creative personnel of two large collectives in Nakhodka. But first let us have a little background on introduction of the all-weather loading complexes, in the words of port chief engineer V. Misan:

"Ten years ago imported loading units, small pneumatic pumps, began spreading across the country. To be frank, it was far from a triumphal march. They are troublesome units, without much power, and moreover they require a separate portal crane to support the flexible hose through which the load is sucked out of the hold into the cars. And the port workers of the country, who had undertaken to introduce this machinery with enthusiasm, soon became disenchanted: the loading complexes were a lot of trouble, and not much use. But the technique itself was attractive. Then the port workers of Novorossiysk with the Black Sea TsPKB [Central Planning and Design Bureau] worked out and realized the design of an important new loading complex. The concept was simple. The pneumatic pumps were put on a double-track gantry, and on this same platform they mounted a small crane with a winch and boom to support the suction pipes. A simple, elegant design."

This first all-weather loading complex later became accepted at many ports of the country, but not Vladivostok and Nakhodka. Why? The chief internal lines of these two commercial seaports were triple-track lines and to put the Novorossiysk complex to work it was necessary to find a place for an additional double-track dock. Whereas the Vladivostok workers could still find some way out of this situation, the still-new commercial port of Nakhodka does not have much room. And to be honest, they were disturbed by the low carrying capacity of the new complex. It turned out to be more efficient to wait out bad weather and then put their powerful grapples to work.

When a new batch of pneumatic pumps was delivered with much greater power output, almost equal in productivity to the grapples, the question of whether to use the new complex answered itself. They had to do it, to find a place. "It would be good to build them on the basis of a triple-track gantry," the Far Eastern port workers thought, and they sent this request to the Black Sea TsPKB. The Black Sea designers responded that mounting the pumps on a triple-track gantry would be fundamentally different from the earlier design and that the project would take at least eight months. The Far Eastern TsPKB confirmed this: 6-8 months. These times did not suit the port workers. The people in Vladivostok thought it over and found a dock for the already proven double-track complex. But what about the port workers in Nakhodka?

"We consulted with our designers and specialists at the Nakhodka shipyard. We thought long and hard, and reached the conclusion that a triple-track all-weather complex could be built quickly," Vadim Andreyevich Misan related. "We began with gantries from discarded triple-track cranes. Our design bureau, where senior engineer Nikolay Yevgen'yevich Belyayev was in charge of the project, did it in two months, November and December. They made all the necessary calculations, simplified the design as much as possible, and prepared the drawings. The shipyard workers went to work. We found one gantry at Dal'mormontazh [possibly Far Eastern Maritime Installation Trust] and the other at Dal'tekhflot [possibly Far Eastern Technical Fleet]. These organizations understood and appreciated our request and turned over the gantries, which they did not need, without unnecessary talk."

Incidentally, this is not the first time the engineers of the port of Nakhodka have had the idea of using gantry cranes that had been written off. The port fleet, for example, modified an old gantry to make a slipway, while on one of the docks of the port a similar gantry, which had served its time, became a bay for container repair work.

They stand at different ends of the Nakhodka shipyard, the two four-legged gantries on which Aleksey Kolesnikov's ship hull worker brigade is already finishing its work. From the very first day V. Voloshin, senior foreman of the ship hull shop of the plant, and D. Koval', foreman, focused their attention carrying out the port workers' plan. And the profound confidence that the chief of the port of Nakhodka feels about the scheduled introduction times for these complexes is based on the reputation of the shipyard workers and their enterprise. The yard has built 25 diesel ships of the Nakhodkinskiy Rabochiy series and many other vessels.

Each of the two new complexes will unload 3,000 tons of loose materials from the holds of ships, almost exactly the same amount that the Nakhodka workers are unloading today by grapples. Is this a victory? It certainly is. It is a victory for engineering and design thought combined with the skill of the workers and their desire to build these two complexes.

But it seems to me that this story will be somewhat instructive for the workers of the two central planning and design bureaus, the Black Sea and Far Eastern bureaus, as well.

But how were the workers of Nakhodka able to carry out such a large project so quickly? It was because they understood the necessity and importance of these two all-weather complexes which are capable of working on a par with the grapples, and the immediacy of the problem! In other words, while for some it was an ordinary job, for them it was a special assignment. And the port and shipyard workers of Nakhodka did an outstanding job, which was what the situation required.

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OCEAN AND RIVER

PROBLEMS OF SIBERIAN RIVER SHIPPING REVIEWED

Moscow VODYNYY TRANSPORT in Russian 11 Feb 82 p 2

[Article by L. V. Bagrov, RSFSR minister of the river fleet: "The Second Navigation Season of the Five-Year Plan"]

[Excerpts] Unfortunately, one of the collectives that did not fulfill its cargo turnover plan was the collective of the Volga Unified Steamship Company, which performed its 1981 assignment at the 94.4 percent level. The collective of the steamship company allowed cargo turnover to decline 2 billion ton-kilometers compared to the 1978 level, including 500 million ton-kilometers for dry cargo; moreover, use of the fleet was significantly worse.

In addition to failure to fulfill the cargo turnover plan in the last navigation season, the collective of the Irtysh Steamship Company, for the first time in recent years, did not fulfill its crucial assignment for shipping to the petroleum and gas extraction regions of Western Siberia. The USSR People's Control Committee reviewed the situation at the Irtysh company as to organization of cargo shipping for the enterprises and construction sites of the petroleum and gas industry of Western Siberia and use of the fleet. The committee severely reprimanded N. Zhivotkevich, head of the steamship company, for major shortcomings in its work and demanded that he and all the managers of the company fundamentally improved all its work. We must expect that the harsh, but fair, evaluation of the work of the Irtysh Steamship Company will be a real lesson to all steamship company managers.

In the last navigation season shipment of interbasin cargo by the companies of the central and northwestern basins increased 4.7 percent by tons and 4.1 percent by cargo turnover compared to 1980. The transfer of dry-cargo tonnage increased by 4.2 percent. But assignments for transfer of tonnage among interconnecting steamship companies are not being fulfilled. The Kama Steamship Company did an especially poor job of transferring ships, receiving 104.6 percent of planned tonnage but transferring only 81.9 percent. It is clear from these bare figures why the level of fulfillment of measures for fleet use on the Kama did not reach even 90 percent of the plan, and the financial situation of the company's enterprises has become extremely difficult.

The collectives of the port processed 60 million tons of cargo beyond the plan last year and fulfilled their socialist obligations. But the existence of serious problems in the work of the ports led to large amounts of transit fleet downtime and loss of carrying capacity. Analysis of the work shows that the managers of many ports gave solving local problems priority over the transit fleet. Substantial above-plan fleet downtime occurred in the following steamship companies: Irtysh (10.9 million tonnage-days), Yenisey (7 million), Amur (3.7 million), Moscow (3.2 million tonnage-days), and others. The collectives of 18 of the 70 large ports did not meet established ship-hour norms at their docks and held up the transit fleet for cargo operations.

The Ministry of the River Fleet fulfilled its plan for foreign trade shipping by tons, cargo turnover, and earnings in 1981. Shipping of imported grain, potatoes, and other food products was done according to the assignment. More than 170 ships engaged in overseas shipping are continuing operations during the winter in maritime basins that do not freeze over.

At the November 1981 Plenum of the CPSU Central Committee Comrade L. I. Brezhnev called special attention to the need for priority emphasis on two programs, the food and fuel-energy programs. Most of our steamship companies are participating in solving both problems. Providing good-quality shipping for agriculture is our paramount task.

During the current year 17.2 million tons of shipping is to be done for the petroleum and gas industry of Tyumenskaya and Tomskaya oblasts, an increase of 1.5 million tons over the 1981 level. There is no need to say how important this task is. The Irtysh and West Siberian steamship companies have enough first-class ships and capacities at shore enterprises to meet this challenge. The main thing is to put all ships into use and to staff fleet and shore subdivisions with essential cadres.

Serious shortcomings in fulfilling the prescribed assignments for operational and industrial activity determined the situation in the economic sphere. According to operative data, the ministry underfulfilled the profit plan by almost 38 million rubles. Out of 20 steamship lines, only 6 fulfilled the established profit plan. In this regard, the leadership of all the sector's subunits is obligated to take the most decisive measures to fulfill the accumulation plans and to prevent any losses negatively affecting the profit plan.

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SHIP, RAILROAD, MOTOR VEHICLE COORDINATION IN PORTS DISCUSSED

Moscow VODNYY TRANSPORT in Russian 16 Feb 82 p 1

[Article: "Improve the Leningrad Method"]

[Text] In January most of the transportation centers totaled the results of socialist competition for 1981 at combined meetings of enterprise collectives. They focused their attention on shortcomings and ways to eliminate them in order to continue stepping up the pace of cargo transshipment, reducing processing time for means of transportation, and shipping cargo to its destination faster.

The collectives of the transportation centers have worked intensively under conditions of a hard winter. In January the volume of cargo transshipment was raised 23 percent compared to January of last year, although the transshipment plan as a whole was only 99.8 percent fulfilled because of failure to fulfill the plan of loading-unloading work at most of the transportation centers of the Baltic. The main reason for this was a shortage of railroad cars for imported goods; the Baltic and October railroads did not deliver the planned numbers of cars.

In the transportation centers based on seaports more than 83 percent of all foreign trade cargo is handled in cooperation with railroad transportation. About 60 percent of these goods were transhipped according to the most progressive variations: ship-to-railroad car and railroad car-to-ship. The question of improving cooperation in the work of maritime and rail transportation enterprises has received and is now receiving special attention, because speeding up the shipment and delivery of cargo for the national economy depends primarily on this.

In January about 30,000 tons of imported cargo was carried from the seaports by motor vehicle transportation. The ports of the USSR Ministry of Fishing have been more involved in transshipping this cargo. River ships have done a great deal of work to insure timely delivery of bulk cargo to the shallow harbors of the Black Sea-Azov basin from such deep-water ports as Odessa, Il'ichevsk, Novorossiysk, and Ust'-Dunaysk.

The precise organization of work by port and railroad workers in the Il'ichevsk, Zhdanov, and Novorossiysk transportation centers enabled them to fulfill stepped-up plans for transshipment of bulk cargo under difficult weather conditions. This work was also well-organized by the Northern Railroad and the port of Arkhangel'sk, and by the Dnepr Railroad and the port of Feodosiya. The same thing cannot be said for the Baltic, October, and Far Eastern railroads which failed to deliver 32.4, 25.1, and 35.8 percent respectively of the railroad cars planned for this cargo.

The Novorossiysk transportation center performed an important assignment for transshipment of raw sugar, and the overall plan for railroad shipment of imported goods was fulfilled by 103.1 percent. The Zhdanov transportation center also fulfilled its plan for shipping these goods.

The transportation centers did a great deal of work in January on processing refrigerated goods. The volume of transshipment of these goods was up almost 32 percent over the same month of last year. The transportation centers of Murmansk, Kaliningrad, Ventspils, Klaypeda, Belgorod-Dnestrovskiy, Nikolayev, and Kherson worked consistently.

January saw a further increase in ship and railroad car turnaround in the transportation centers. About 60 percent of the dry cargo was processed ahead of schedule, which gave a savings of more than 1,500 ship-days of downtime. At the same time, 236 ships did lose time in the transportation centers. Things were especially poor in Reni where 149 ships, 31.2 percent of the total number, lost scheduled time. This testifies to the low level of work organization at this port.

Railroad car downtime is still very substantial in the transportation centers. During some periods the port stations did not deliver cars on time for loading and unloading, which caused unproductive downtime for personnel, machinery, and also ships. There were cases where railroad cars were delivered but not processed promptly. The processing of railroad cars was done most poorly at the Reni transportation center, where 13.6 percent of the cars delivered for loading and 9.6 of the cars for unloading were not done on time. Unloading of railroad cars was also done poorly in the ports of Kherson, Kerch', and Odessa.

In most of the transportation centers, however, railroad cars were delivered and unloaded promptly. Murmansk, Tallinn, Pos'yet, and Nakhodka fulfilled established monthly norms for car unloading. A small lag was observed in Il'ichevsk, Leningrad, and other centers mainly because of untimely arrival of loaded cars.

The delivery of empty cars by the railroads for shipping goods to receivers rose 7.5 percent in January of this year compared to the same month of last year. But it was significantly below the plan (17.8 percent) and the requests of the ports (32.3 percent). Boxcars for poured bulk goods and packaged goods were especially hard to get; stocks of packaged goods remaining in port did not decrease, they actually increased. The requests of the ports of Leningrad, Riga, Klaypeda, Odessa, and Nakhodka for cars to carry poured materials were not satisfactorily met. They fell more than 30 percent short of the planned number of cars.

Because of the shortage of gondola cars the plan for pipe shipping was only 68.5 percent fulfilled. On an average day the railroad fell 118 cars short of the plan and 195 cars short of port requests. Pipe shipping went very poorly in the Leningrad transportation center where the plan was barely one-third fulfilled.

To broaden the front of work on transshipment of labor-intensive cargo a proposal has been adopted to continue in 1982 the procedure followed earlier for establishing plans for the railroad to deliver cars for cargo loading to maritime, fishing, and timber ports and the procedure for receiving and turning over goods in these ports in conformity with the current document "Basic Conditions of Receiving and Turning Over Export and Import Cargo at Railroad Stations and Seaports." The railroads that run to ports must deliver cars for loading at the requests of the fishing and timber ports, and the seaports should help them receive and turn over goods to the railroads.

These Basic Conditions also apply to the ports of the Ukrainian Main Administration of the River Fleet, which will make it possible to improve cooperation between river and railroad workers in transshipment of foreign trade cargo. The procedure for planning the hauling of imported goods from seaports by motor vehicles has been agreed upon, which will help reduce short-distance railroad shipments.

Given the steadily growing volume of shipping and transshipping the questions of further improvements in the method of the Leningrad transportation workers and strengthening work cooperation among allied forms of transportation are becoming paramount. It is essential for all transportation centers to make changes and refinements in uniform technological processes of work by seaports and port railroad stations and establish more progressive norms for the delivery, processing, and cleaning of means of transportation which, if met, will make it possible to incorporate the planned amounts of shipping and transshipment. Special attention must be devoted to the quality of shift-day planning. The railroad administrations and sections in the steamship companies must strengthen their monitoring to see that ports and port railroad stations load and unload ships and railroad cars at the level envisioned by each ship-day plan.

The job of the coordinating councils of the transportation centers is to create proper conditions for unconditional fulfillment of obligations aimed at speeding up the processing of ships, railroad cars, and motor vehicles, raising labor productivity, and increasing the pace of transshipment. The coordinating commissions of the local Soviets of Peoples Deputies should provide help here.

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WINTER SHIPPING ON DNEPR SUCCESSFUL

Moscow VODNYY TRANSPORT in Russian 25 Feb 82 p 1

[Article by A. Davydov and L. Sobolev, Dnepropetrovsk: "Channel Through the Ice"]

[Text] The frequent weather changes in the Ukraine presented a kind of test of the maturity of republic river workers. They had adopted a firm policy of organizing year-round navigation. Let us recall that the line from Zaporozh'ye to Energodar operated continuously through the winter of 1979-1980, followed by the line from Komsomol'sk-na-Dnepre to Dneprodzerzhinsk. That is why this winter, as before, local fleets are working in most of the ports of the basin and two transit lines are operating at once, from Komsomol'sk-na-Dnepre to Zaporozh'ye and from Zaporozh'ye to Energodar. We will talk about the former, which is 214 kilometers long.

Six diesel ships are now making regular runs on this line, carrying iron ore pellets. In especially difficult segments they are escorted by the powerful pushboats Admiral Ushakov and Admiral Nakhimov. These boats crush the ice in the river channel and, when necessary, take the ships under tow.

The current winter navigation season has drawn on the experience of all the previous ones: dozens of organizational-technical steps were carried out before the ships set off on their first runs. Experienced crews have been enlisted for work on this line. Sections of pneumatic pipe installations were laid on the bottom of the upper and lower pools near the gates of the Dneprodzerzhinsk lock to make a lane that does not freeze. The river workers did the same thing at the docks of the Poltava mining and concentrating combine. They considered everything: construction of channel light houses, preparation of shore machinery and comprehensive maintenance subdivisions for continuous work, and insuring precise operations by the safety service. If unforeseen difficulties or a crisis situation occur, they have even envisioned steps to relocate the fleet and use it on lines below the Kakhovskaya GES. But that would be in a crisis. In general the delivery of pellets cannot be permitted to stop, because that would leave the industrial giant Zaporzhstal' without metallurgical raw material. So the prestige of the river workers is also at stake. Nature, however, has its own laws and ways, and the elements can also be obstinate. Indeed, there have been some difficulties this year.

While making a standard tour of his ship for the situation, Aleksandr Matveyev, pilot of the Admiral Nakhimov, found water in the bottom compartments. The water continued to enter as they searched for the cause, and soon the emergency signal went on. It turned out that hummocky ice had pierced the hull just above the waterline in the stem area. The convoy was forced to withdraw from the channel immediately and tie up at the dock of the City Cargo Region of the Port of Dnepropetrovsk. Shore specialists called in by radio arrived immediately to repair the ship. In just a short time the convoy was on its way again.

This is not the only case where a ship has gotten into a serious situation. Anatoliy Solov'yev, captain of the diesel ship Ovruch, related how his ship, which was following the Artemovskiy, suddenly found itself caught in hummocky ice. And right away the intensive ice movement that is dangerous for ships began.

What could they do? The tugboat Admiral Ushakov, which was piloting the ships upstream, had remained far behind, while the Admiral Nakhimov had not arrived yet. Meanwhile the sheet of ice kept advancing and advancing. Sometimes hummocks would rise to the level of the deckhouse, and ice "played" across the deck. The crew sent an urgent appeal for help from the diesel tugs of the port of Dnepropetrovsk, who quickly arrived and freed the Ovruch from its ice imprisonment.

Despite the difficulties, the Ukrainian river workers are carrying out an interesting task of great state importance, working hard to bring closer the day when year-round navigation on the rivers of our country will become an accomplished fact.

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SOVIET TANKER CARRIES DIESEL FUEL TO IRAN

Moscow VODNYY TRANSPORT in Russian 27 Feb 82 p 1

[Article by M. Berchiyan: "The Crew Is Mastering a New Line"]

[Text] When the Suez Canal was closed to shipping Iran found itself cut off from its European trading partners. At this time Soviet seamen helped solve the problem that had arisen for our southern neighbor. Hundreds of thousands of tons of transit cargo were shipped from Western Europe to Iran by internal Soviet waterways.

Now there is a new manifestation of our good neighbor policy. Early in 1982 the Islamic Republic of Iran, a major petroleum importer, needed diesel fuel for its agricultural northern provinces. In mid-February the tanker Lisa Chaykina took on a load of fuel in Baku and departed for the port of Noushekhr.

The crew on this experimental run was headed by Captain V. Avtaykin, who was formerly captain of the tanker Baladzhary which delivered vegetable oil to Iran. Right from the beginning of this trip it was apparent that his past experience was inadequate.

"We did not have full information on the condition and carrying capacity of the cargo-handling equipment and pipelines in the port of Noushekhr," V. Avtaykin says. "The line and the tank into which we delivered the vegetable oil were not involved. We had to learn to use new facilities. Above all we had to carefully monitor pumping of the fuel."

First mate V. Teshchin and donkeyman Z. Novruzov had their own concerns on this ship. The problem was that the diameter of the flanges of the tanker Liza Chaykina's unloading pipe was 300 millimeters, while the flange on shore was slightly larger, 400 millimeters in diameter.

"For a reliable connection," said V. Teshchin, "when the transport fleet service brought the standard flange on board we had them secure it more strongly, for gale conditions."

Seamen V. Prikhod'ko, F. Dzhafarov, and Z. Samedov quickly set the flange in a safe place, secured it, and covered it against the rain and wind. It was as if the navigator could foresee that the tanker would not get to Noushekhr on schedule. A storm moved swiftly onto the Caspian and broke with such force that all ships hurried for shelter. Captain V. Avtaykin radioed to Baku: "Gale-force north winds, heading for Sal'yany roadstead, arrival Noushekhr delayed, further reports will follow."

The next report came three days later and during these three days the crew helped shore workers adjust the new pipeline system for using the ship's powerful pumps to pump fuel into tanks on shore.

> While the paper was going to press the editorial offices received a report that the diesel tanker Liza Chaykina had completed its experimental run from Baku to Noushekhr. The trail has been blazed for tanker traffic on another petroleum route across the Caspian, the first international route.

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OCEAN AND RIVER

DEVELOPMENT OF RIVER PORTS

Moscow RECHNOY TRANSPORT in Russian No 2, Feb 82 pp 5-6

[Article by V. Matalin, candidate of science, Central Science Research Institute of Economics and Operation of Water Transportation: "Development of the Ports--Constant Attention"]

[Text] A task was given to river transport at the 26th CPSU Congress: increase freight turnover by 19 or 20 percent during the 11th Five-Year Plan. During this plan period, a large volume of the bulk freight would be shifted to the river transport system from the railroads.

This increase in the volume of cargo shipments requires a substantial strengthening of the materials and equipment base of the steamship companies, primarily involving development of the ports.

Between 1976 and 1980, about 6.3 kilometers of pier facilities were constructed and put into operation, work on the reconstruction of individual piers was completed, and their capacity for mechanized operations was increased.

However, a gap between the freight handling capacity of the piers and the carrying capacity of the ships has developed in a number of basins, because of a recent slowdown in the rate of constructing mechanized piers. Thus, 8.7 kilometers of pier facilities were put into operation between 1970 and 1975; whereas, between 1976 and 1980, the completion of pier facilities decreased by 27.5 percent in comparison with the preceding five years. The volume of shipments of dry cargo correspondingly increased by 28 percent in 1980 over that in 1975, and the total tonnage of the dry cargo fleet increased by 16.6 percent.

As a result of a lag in the development of the ports, a significant amount of ship mooring time has been tolerated, particularly while they wait for cargo to be processed. This delay hampers the growth in the volume of shipments, lowers the effectiveness of ship operations and the labor productivity of the crews, and sharply increases the total costs for delivering freight.

The intensiveness of cargo processing for the ships rises constantly. This results from the technical refitting of the piers, involving the installation of additional cranes and the replacement of low cargo-hoisting capacity cranes with more productive ones. But such measures generally have a negligible effect on the increased freight handling capacity of the piers, the timely processing of ships in most of the ports is hindered in relation to the handling capacities of both the warehouses and the railroad spur and loading and unloading lines.

Analysis of the current status of the ports shows that the majority of the piers are now operating within or close to the limits of their technical potential. Only about 7 percent of the piers have excess freight handling capacity. The piers with the excess capacity include those that specialize in the handling of specific kinds of cargo; for example those that handle apatite (port of Medvezh'yegorsk), crated and piece freight and containers (ports of Moscow Yuzhnyy, Saratovsk, Perm', and others), or the transfer of coal from the railroads to river transport (Ust'-Donetskiy).

An increase in the volume of cargo shipments is anticipated, including those that are dispatched along combined railroad and waterway routes. This increase will be accompanied by a sharp increase in the volume of transshipments and by the need to increase the reliability of port operations, particularly distribution operations.

The need for the further development of the ports is emphasized in the resolution "Fundamental Directions in the Economic and Social Development of the Soviet Union Between 1981 and 1985 and During the Period to 1990," which was adopted by the 26th CPSU Congress.

In accordance with the decree of the CPSU Central Committee and the USSR Council of Ministers "On Measures for the Development of River Transport Between 1981 and 1985," the 11th Five-Year Plan provides for the construction and placement into operation of 4.8 kilometers of mechanized piers in 14 ports. The plan also calls for the construction, reconstruction, or development of railroad spur lines, pre-port terminals, and contiguous terminals. In all, more than 130 kilometers of railroad lines will be built or rehabilitated in 19 ports.

However, the development of the ports does not fully eliminate the lag in their carrying capacity in relation to the growth in the volume of shipments and in the carrying capacity of the inland fleet. Therefore, a primary task in the long-range development of the ports is to achieve a level of development of their material and equipment base that is compatible with the rate of growth in shipments and that provides for a substantial speedup in the processing of the ships. With this goal in mind, the next five-year plan envisions the placement into operation of no less than 9 to 9.5 kilometers of mechanized pier facilities, including those at Kalyazin, Dmitrov, Temryuk, Ufa, Kambarka, Kineshma, Tol'yatti, Syzran', Volgograd, Rostov-na-Donu, Cherepovets, Blagoveschensk, Khanty-Mansiysk, Surgut, Sergino, Kamen'-na-Obi, Salekhard, Nefteyugansk, Kargasok, and Svobodnyy. Several complexes that will be fitted with high production conveyers for transferring bulk freight will be constructed within operational piers.

Over the long term in the shipping companies in the central and northwestern basins, the development of piers will be necessary in most of the operational ports, including Kuybyshev, Perm; Chaykovskiy, Medvezh'yegorsk, and Petrozavodsk. In the steamship companies in the eastern basin, piers will be developed at Tobol'sk, Nizhnevartovsk, Irkutsk, Khabarovsk, Tommot, Strezhevoye, and Osetrovo.

A special decision is required on the question of building ports and mechanized piers to unload ships along northern sites on the Siberian rivers. Pier construction at these sites must be done with the partial participation of the ministries and departments involved. A solution to this problem, however, must be preceded by special studies on the types of piers, on their equipment, and on the appropriate mix of cargo deliveries to different sites.

Along with the construction of additional pier facilities in the ports, the reconstruction of many operational piers will be required in the future.

With the goal of reducing the mooring time of vessels, particularly expensive heavy cargo ships, resulting from the irregular operations of mixed types of transport within such ports as Yaroslavl', Kineshma, Ul'yanovsk, Kuybyshev, Volgograd, Rostov, Ust'-Donetsk, Perm', Levshino, Ufa, Novosibirsk, and Tobol'sk, there is a genuine need to increase the warehouse space, especially for bulk and timber freight destined for mixed railway and inland waterway transport or contained in multipurpose and large containers. The construction of enclosed storage facilities is necessary in a number of ports, particularly those located in the northern and eastern sections of the country. In certain ports, it would be beneficial to build base warehouses for bulk cargo.

To increase the mechanized operations of the piers and further increase the intensiveness of processing the freighters, it is necessary to increase the inventory of cargo transfer equipment and machinery for warehouses, ship's holds, and freight cars, and for cleaning operations. Along with multipurpose cranes, inland ports must be supplied with highly productive, specialized equipment, including equipment for transshipment complexes.

Within large ports, specialized service bases containing land-based and floating engineering facilities must be developed to improve the full services to the transport fleet.

Particular attention must be given to the construction of piers for enterprises and organizations of various ministries and departments. In recent years, these piers have received singular development, especially in the eastern basins. Nevertheless, the total level of their development markedly lags behind current needs.

The development of the total number of departmental piers must be accomplished by taking into account the appropriateness of including base warehouses at the piers, which support the delivery of bulk cargoes at a volume that meets the annual needs of the enterprises that are served.

Simultaneously with the expansion of the construction of special purpose piers, it is necessary to sharply increase the carrying capacity of the majority of the operational piers by increasing their mechanization 2 to 2.5 times over and by expanding their storage facilities. The reconstruction of many pier structures and the provision of appropriate depths at the piers and in the approaches to them are also necessary.

The development of the materials and equipment bases of the ports will make it possible to substantially increase the intensiveness of the processing of the ships. For general use piers, the increase generally will be about 1.8 times and for ministry and departmental piers it will be about 3 to 3.5 times.

It must be stressed that the successful implementation of pier construction is largely a factor of the timely furnishing of construction organizations with design plans and specifications. Therefore the sector State Institutes for the Design of River Transport, the Leningrad State Institute for the Design of River Transport, and the Siberia State Institute for the Design of River Transport have the vital task of the timely completion of all design plans.

It must be mentioned that excessive mooring time of vessels is tolerated in the majority of the ports, even those of recent construction. This is equivalent to disagreement in design decisions, particularly technological ones, with the actual status of port operations.

The parameters of the basic elements of the piers are defined in accordance with the existing statutes and standards. In line with changes in the operational status of the ports, the improvement of the technology and management of their operations, the development of engineering devices, and other factors, the need arises for periodic inspections and refinement of methods and standards data.

However, the work that the State Institute for the Design of River Transport has done in this area is not of a systematic and complete character. For example, standards for technical, economic, and cost indicators are derivative and are developed based on schedules for previous documents that controlled the planning of the technical and technological parameters of the ports. The standards that define the schedules for storage of freight in port warehouses, the proportion of freight that should be forwarded either directly or warehoused, the unequal shipment of freight during navigational seasons, the time for the completion of auxiliary operations, and other matters are for the most part outmoded and do not correspond with the actual operational status of the ports. Therefore, it is necessary to develop a scientifically-based standard system for calculating the fundamental parameters of the piers: frontal and rear mechanization, storage space, railroad spur lines, and so on. The refinement and development of a number of methods statutes are also needed. An organizational plan should be prepared as an integral part of planning documentation. The lack of such a document forces workers in reactivated ports to solve operational, technological, and organizational and management problems without appropriate recommendations, which substantially lowers the efficiency of their work. Additionally, after a port project is completed, planning institutes should conduct inspections of the project for several years, which will reduce the period of assimilation and movement of the port toward the planned level of operations.

Sector planning institutes also must pay attention to the types and structure of pier embankments. The construction of simple and inexpensive pier facilities have been approved in some instances. For example, the handling of minerals and construction materials and some other freight bound for local enterprises, which often arrive consigned for local enterprises in non-self-propelled relatively inexpensive vessels, can be done successfully at piers that are equipped with the simplest of facilities. Neverheless, such piers must have convenient water approaches, access roads, warehouse areas, and so forth. Piers equipped for hydraulic unloading of ships are effective for handling large volumes of sand and sand and gravel mixtures.

The expansion of the operations of the transport fleet because of extended navigation seasons has placed new demands on shore-based port facilities and equipment that must be taken into consideration during planning.

The successful solution to problems of the development of ports to a large extent is a factor of the coordination of the work carried on by sectorial scientific and planning institutes, departments, and design organizations. In this regard, great doubts arise as to the appropriateness of liquidating the division for the long-range development of ports and piers of clientele within the central organization of the Ministry of the River Fleet, since the division had to establish technical policy in an area that is important to the sector.

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OCEAN AND RIVER

FIRST 'ATLANTIK-333' FREEZER TRAWLER BUILT

Baku VYSHKA in Russian 4 Feb 82 p 3

[Photo Caption]

East Germany. The first "Atlantik-333" class freezer trawler has been built for the Soviet Union at the Volkswerft shipyard. By 1985 the shipbuilders at Stralsund will have delivered 100 such ships to Soviet buyers.

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OCEAN AND RIVER

BRIEFS

NUCLEAR FREIGHTER FOR ARCTIC--Construction of the country's first nuclear-powered freighter is well underway. This lighter and container carrier, which can pass through medium thick ice, will operate in Arctic waters that still lack well equipped piers. After arriving at her destination, the nuclear freighter will deliver her consigned cargo-filled lighters (in this case, they are floating containers weighing about 500 tons) and then will continue her run. Seventy-three lighters can be loaded on board the 260 meter freighter. [Text] [Moscow TRUD in Russian 1 Jan 82 p 1] 7198

MODERN RESEARCH SHIPS--Shipbuilders in Turku, Finland are building five scientific research ships for the State Committee on Hydrometeorology and Environmental Control. The lead ship in the series will be delivered this year to the Leningrad Arctic and Antarctic Scientific Research Institute. "A distinguishing characteristic of this series is that these scientific research ships are the first ones in which the collection and processing of weather data are fully automated," declared A. Shishkov, chief of the fleet department of the State Committee for Hydrometeorology. "This has become feasible thanks to the domestic 'SM-4' computer. The new ships will regularly transmit collected data to the international weather networks for the compilation of long-range forecasts. Their reinforced hulls will allow the ships to operate in Polar waters." The five scientific ships of tomorrow have been given the names of prominent scientists and hydrometeorologists: "Akademik Shuleykin," "Adademik Shokal'skiy," "Professor Khromov," "Professor Molchanov," and "Professor Mul'tanovskiy." [By Ye. Panyukhno] [Text] [Moscow NEDELYA in Russian No 51, 14-20 Dec 81 p 9] 7198

SEA TRIALS FOR RESEARCH SHIP--The scientific research ship "Akademik Aleksey Krylov" is being readied for sea trials at the "Okean" shipyard in Nikolayev. Displacing approximately 10,000 tons, this floating laboratory spearheads a new series of ships designed for complex studies of the world ocean. [Text] [Moscow IZVESTIYA in Russian 27 Nov 81 p 6] 7198

LATVIAN REFRIGERATOR SHIP--The name of Captain Vladimir Ivanovich Kulinich, the honored Latvian fisheries worker, will indelibly be listed on the rolls of the crew members of the new refrigerator ship which arrived at Riga, its home port, on 28 December. Early in the 1960s when the Atlantic fisheries were being developed, the fisheries workers in Latvia requested that specialists in Murmansk send experienced ship's captains to Riga. V. I. Kulinich was one of those who came to Latvia. He instructed tens of experienced fishery workers who now command sea going vessels and depot ships. V. I. Kulinich himself commanded large freezer trawlers, depot ships, and refrigerator ships. He was awarded state prizes for his selfless labor. He died while on duty at sea on a scheduled run. The new ocean-going refrigerator ship received the name "Kapitan Kulinich" in response to the initiative of the fishery workers of our republic when the ship's hull was laid down in a shipyard in East Germany. This refrigerator ship is the first one of its type in the flotilla of the Latvian fishery. Her displacement exceeds 17,000 tons. She has been designed for the rapid delivery of catches from the most remote fisheries of the world ocean. Among those who welcomed the new ship to the Riga maritime fishery port were relatives, friends, and students of Captain V. I. Kulinich. [Text] [Riga SOVETSKAYA LATVIYA in Russian 30 Dec 81 p 4] 7198

SEVERO-KRYMSKIY CANAL WIDENS--The Severo-Krymskiy Canal is penetrating still deeper into the Tavricheskoye steppes. The installation has begun of the fittings for four pumping plants along the second stage of the main for the hydraulic engineering complex. The installers have promised to complete the construction of the hydraulic engineering complex by 1 May and to deliver the pumping plant keys to the operators. This will enable the delivery of waters from the Dnepr to the Pervomayskiy, Razdol'nenskiy, and Sakskiy areas by the next navigation season. The waters of the Dnepr now irrigate 230,000 hectares of arid land on the peninsula. By next year, the irrigated area will be further increased by 10,000 hectares. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 7 Jan 82 p 2] 7198

"PROFESSOR VIZE" RETURNS--The scientific research ship "Professor Vize" of the Arctic and Antarctic Scientific Research Institute has returned to its home shores from the northern Atlantic. The participants in the voyage, which was led by the chief of the expedition A. Nagurnyy and by Captain Yu. Burmistrov, conducted complex research in the North Sea, the Norwegian Sea, the Greenland Sea, and in the Danish Straits between Norway and Greenland. This scheduled voyage coincided with a milestone in the ship's biography. Fifteen years have passed since the USSR state flag was hoisted on board this ship, which was constructed to study the large-scale interactions between the oceans and the atmosphere, the formation of weather conditions, and hydrologic and ice characteristics. Thirty-eight voyages have been completed, including 10 to the white continent. More than 722,000 miles have been travesersed, 82 autonomous buoy stations have been set up, and more than 90 meteorological rockets and radiosondes have been launched. Our ship has participated in many domestic and international scientific programs in diverse areas of the world ocean. [By V. Khokhlov] [Moscow VODNYY TRANSPORT in Russian 7 Jan 82 p 4] 7198

TRANSPORT OF CARGO PONTOON--The crew of the ice breaker "Kapitan A. Radzhabov," commanded by Captain of Ocean Navigation A. Filimonov, a bearer of the Order of Lenin, for the first time in the history of the Caspian Maritime Steamship Company, completed the long-distance delivery of a heavy cargo pontoon. Fitted with a power station weighing 290 tons, the pontoon was towed from Rotterdam, Holland to the small city of Ramsar in Iran on the southern coast of the Caspian Sea. Enroute the caravan transited the North Sea and the Baltic Sea. Cargo was then delivered to Baku via inland waterways, and from there to the shores of Iran. The length of the itinerary amounted to more than 6,000 kilometers. The full journey took exactly one month. [Text] [Baku VYSHKA in Russian 31 Oct 81 p 3] 7198

AIR-CUSHION CARGO SUPPORT--Tests of an air-cushion support, which is used for unloading heavy tonnage containers, are being conducted in the ports of Magadan and Pevek. The support assembly was constructed in the student's design bureau of the Kharkov Aviation Institute by a group of students under the supervision of senior engineer N. Morozov. The support consists of a platform situated on a flexible skirt. Compressed air from a yard supply line or a separate compressor generates positive pressure under the platform, which furnishes lifting power. Several such supports can be assembled into a unified system for handling cargo weighing up to 100 tons. The simplicity of the design, the low metal content, the reliability and safe operation, and the low capital value and operating costs have impressed the manufacturers. The platform has the exeptionally low friction coefficient of only 0.002. Application of a total force of 5 kilograms can move a ton of freight. The support resulted in a savings of 17,000 rubles at the Kharkov Aviation Plant, where it was assembled. The support assembly has found widespread application at enterprises, in ports, and in the railway system. [Text] [Kiev RABOCHAYA GAZETA in Russian 25 Dec 82 p 2] 7198

NEW BOOK ON MARITIME TRANSPORT--The role of maritime transport in the national economy and its place in today's nationwide unified transportation system, and the tasks placed on the maritime system by the 26th CPSU Congress and the measures for implementing them are thoroughly examined in the new book by T. B. Guzhenko, Minister of the Merchant Fleet, titled "USSR Maritime Transport During the Development of Socialism" (Moscow, "Transport," 1981, 104 pp.). A wealth of factual data is used to depict the part played by maritime transport in the rational distribution of the country's productive forces and in the development of international economic ties. Readers learn about the enormous, selfless work by the sectoral labor collectives to fulfill the demands of the national economy for maritime shipments, to develop essentially unique ways of transporting freight, to identify resources to reduce losses, and to develop the ports. Particular attention is given to the work of the various forms of transportation within the transport system. In this light, those qualitative changes are described that occurred once the CPSU Central Committee had approved the results of the labor cooperation between the Leningrad merchant mariners, railroad workers, trucking workers, and river transport workers. A special section in the book is devoted to the status of international shipping and convincingly reveals the benefits of a socialist planned economy. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 49, Dec 81 p 18] 7198

GIANT FLOATING CRANE--The floating, self-propelled crane "Sevastopolets" has been erected on a slipway of the association "Sevastopol'skiy morskoy zavod imeni S. Ordzhonikidze". In terms of its load lifting capacity of 500 tons, the crane is almost twice as powerful as its "Bogatyr'" predecessors and it has a number of other special features. This first in a series of giant floating cranes will be launched this year. [Text] [Moscow KRASNAYA ZVEZDA in Russian 9 Jan 82 p 1] 7198

ANTARCTIC OPERATIONS, LOGISTICS --Four ships of the 27th Soviet Antarctic expedition are already ploughing the seas in the southern ocean. Initial operations among the ice and icebergs have been completed. The electrically powered motorship

"Mikhail Somov" met with the passenger liner "Bashkiriya" in one of the bays off the island of South Georgia. Headed by the chief of the new expedition D. Maksutov, a large group of investigators of the sixth continent arrived on the liner. After finishing our scheduled work, we again got underway. The dry cargo ships "Vasiliy Fedoseyev" and "Pioner Estonii" were waiting for us amid the ice of the Uzdella Sea. From these ships we took on board polar investigators, helicopters, and cargo for the ice stations. We then dispersed to our separate assignments. The two ice class freighters "Vasiliy Fedoseyev" and "Pioner Estonii" are enroute to the Druzhnaya geologic and physics base. The crew of the "Mikhail Somov" and "Bashkiriya" are bound for the Sea of the Cosmonauts. [By D. Natadze] [Text] [Moscow VODNYY TRANSPORT in Russian 19 Dec 81 p 4] 7198

SHIPS FROM EAST GERMANY--The shipbuilders of the M. Thesen shipyard in Rostock, East Germany have delivered the 30th "Kristall" class depot ship with a carrying capacity of 10,000 tons to the Soviet owners. The depot ship will take on catch from fishery vessels, freeze it, and deliver it to shore points. Vladivostok is the home port of the ship. The shipbuilders of our brotherly country have built yet another ship for operations in the Far East--the electrically powered motorship "30 let GDR," which will be the flagship of the passenger vessels on the Amur River. The quadruple-decked liner contains a solarium, swimming pool, and a 200-seat movie theater. Delivery of these ships to the Soviet Union was completed in fulfillment of the terms of a contract between "Sudoimport" and the East German foreign trade organization "Shiffskommerts". [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 47, Nov 81 p 20] 7198

UZBEKISTAN-AFGHANISTAN RIVER SHIPPING--Ships registered in the port of Termez have completed the first shipments for the communist subbotnik. The steamships Great October, Brest, Valdivostok and Shaydakov led convoys with thousands of tons of economic cargoes to the shores of the Democratic Republic of Afghanistan. The work teams of the entire upper Amu Darya fleet have obligated themselves to complete such shipments for free by 17 April. [Excerpt] [Tashkent PRAVDA VOSTOKA in Russian 18 Mar 82 p 1]

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